DOCUMENT RESUME

ED 198 939 PS 012 045

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TITLE Early Writing: A Develcpmental Approach.
INSTITUTION Kansas Univ., Lawrence. Dept. of Human Development.
PUB DATE Nov 80
NOTE 70p.; Papers presented at the Annual Meeting of the National Association for the Education of Young Children (San Francisco, CA, November 21-24, 1980).

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS Disabilities; Early Childhood Education; Educational Theories; *Handwriting Instruction; *Handwriting Readiness; *Handwriting Skills; Motor Development; *Preschool Curriculum; Teaching Methods; *Young Children

ABSTRACT

This document consists of four papers on the acquisition cf writing skills by young children. The first paper provides a historical and developmental perspective on early writing. Children's development of manual dexterity is briefly overviewed and aspects of the educational approaches of Pestalczzi, Montessori, Chomsky, Rogers and Ashton-Warner as well as the programs of O.K. Moore and Bereiter and Engelmann are pointed out. The second paper briefly explcres two questions: When is a child ready to learn the handwriting skill? and How is the handwriting skill taught? An crganic reading program is briefly described. The third paper discusses 10 skill areas that can be used as assessment criteria, bases for developing writing readiness, or bases for increasing writing ability. The fourth paper presents a method of controlling children's initial responses when learning to make letters. The procedure is designed to eliminate errcrs and reversals so that children can be successful regardless of their conception of the left-right orientation. This final paper also presents a practical method for teaching "at risk" children and children with special needs how to write their names. (Author/RH)

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EARLY WRITING: A DEVELOPMENTAL APPROACH

Symposium

Elizabeth M. Goetz, Coordinator

National Association for the Education of Young Children

Annual Conference

San Francisco

November 22, 1980

Presentations:

EARLY WRITING: HISTORICAL AND DEVELOPMENTAL PERSPECTIVE
K. Eileen Allen, Professor

FOSTERING PRE-WRITING AND WRITING SKILLS IN A FULL-OR PART-DAY PROGRAM
Joan Reiber, Director, Hilltop Child Development

HANDWRITING: WHEN AND HOW
Elizabeth M. Goetz, Associate Professor

PROGRAMMING INITIAL WRITING
Wilma Holt, Instructor

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EARLY WRITING: HISTORICAL AND DEVELOPMENTAL PERSPECTIVE

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Presented as part of a
Symposium on Early Writing:
A Developmental Approach at
the National Association for
the Education of Young Children,
San Francisco, November, 1980.

Early Writing: A Historical and Developmental Perspective

K. Eileen Allen

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The verb "write" and its various tenses - past, present and future - has many meanings. It might mean for example, using a stick to scratch marks of one sort or another in the dirt; committing, in complex code, messages to the computer ("writing a memory unit", as it is called in technical jargon); heeding the soothsayer or occult who tells us our destiny is "written in the stars"; or the symbol-making by the poet, musician, blind calculus genius, or great American novel writer as they consign their thoughts to some form of permanancy via pen, pencil, typewriter, brailler or dictaphone.

The list could go on and on -- is it likely that we could brainstorm among us many additional definitions of the word "write". For our purposes here today, however, let us confine our definition to: 1) the graphic or handwritten representation of the letters and words that symbolically, represent our language, and 2) the act of using these symbols to set thoughts and ideas on paper or blackboard.

This desire to put thoughts into some sort of form that will communicate with others is almost as old as humankind itself. As we all know, the major feature that distinguishes us as humans from the rest of our animal ancestory is the ability to speak, to convert our thoughts into spoken language. Eons ago, with the further evolution of the spoken word into the graphically symbolic form called writing, our two-legged forebearers took us another giant step away from our jungle heritage.

In evolutionary terms, the entire process of symbolic representation (at both the verbal and graphic level) probably depended upon the development

of higher level brain functioning - specifically, the development of the cortex, or what we call the grey matter that underlays our skull. On the other hand, environmental pressures for ever more complex language development (e.g. the need of hunters to make marks on trees so they could find their way home) may well have contributed, in turn, to further cortical development. Retrospectively, then it appears that each process complimented, extended, and elaborated the other. This genetic/biological/environmental pattern of interactions seems to have determined all aspects of development from the earliest days of humankind right up to the present. Nowhere is it more evident than in the acquisition of reading and writing skills.

In an earlier NAEYC presentation on early reading (Allen, Goetz, Holt, and Reiber, 1977), I mentioned this interactive process as a necessary component in the development of the desciplined eye movements required for reading; now I would add, for writing, too. Such control is acquired only by using the eyes and thereby learning to use them better and better (Tyler, 1964). Mylenization (the sheathing that forms around each individual nerve) is another event that demonstrates this developmental inter-dependency. Mylenization of the CNS is by no means complete at the time of birth; instead, the process continues on into the very early years. It appears, however, that even this predominantly biological process is hastened or retarded by how the child functions and what kinds of activities he or she engages in. Certainly there is much that we do not know about this interactive process but we can say with some assurance that readiness for any academic task is much more than the simple "unfolding" of maturational characterisitics that once were thought to be innate in the human infant. We can say further, again with a fair degree of assurance, that it is during the early months and years, while the young child's "anatomical maturation is most rapid, that experience seems to be most important". (p. 56).

Other interactive signs of development are coming more clearly into focus too primarily as a result of the vast amounts of infant research that has been generated over the past ten years. It is increasingly clear that infants, even newborns, are capable of a number of rather sophisticated responses, more than we ever dreamed a generation or so ago that they were capable of making. Many of these responses, perceptual-motor or sensory-motor responses (such as the well-documented ability of very young infants to discriminate certain color forms and specific sound differences) are likely to be the very early and basic underpinnings for the subsequent reading and writing skills demanded by our society for all of its members. A note of caution, however; just because we have discovered that the intact infant is capable of producing many more perceptual motor type responses than we ever thought possible does not necessarily endorse (nor, of course, negate) the introduction of reading or writing at earlier and earlier ages. It's a long road that must be traveled, developmentally and experientially, before a child can make those little marks on paper that signify "talk and thought turned into writing". The important thing to be gleaned from the infant research however, is that we must re-examine our notions about readiness. We must accept the idea that maturation and experience are inextricably intertwined, and that failing to provide certain activities and learning materials may be fostering an unnecessary incompetence in some children, even very, very young children.

Let us see how all of this developmental interaction activity relates to the child's acquisition of the fine motor skills or "hand function"[1] required for so complex a cognitive/motor activity as writing. Many of these cognitive/motoric activities begin in infancy. The newborn, for example, shows a strong and determined primitive grasp reflex. However, by 4 or 5 months

[1] The material on hand function is adopted from Tyler & Chandler, 1978,

of age the grasp reflex has begun to drop out (and well it must if the infant's CNS is developing normally) to be replaced by an imprecise but voluntary grasp with the palm and fingers. In the next several weeks, as functional head control and trunk stability begins to develop, the child engages in an increasing amount of active visual searching because of the newly acquired ability to sit up. At this point, the infant is continually reaching and grasping, using both hands alternately, in non-preferred fashion (preference of one hand over another at this stage may be an indicant of CNS disorder),

It is during this period, that the thumb becomes ever more active and accurate until, somewhere between 9 and 14 months (usually late in the first year) the thumb and index finger work together in a pincer motion to pick up small objects. We all have observed an infant of this age concentratedly picking lint balls off a blanket or sitting in the high chair picking up cheerios, bit by bit. Such activity is an example of the ever-present and insatiable need of normally developing young children to practice, practice, practice a new skill during its acquisition period.

Soon the index finger begins to exhibit still another emerging response - the ability to poke, poke, poke at things (often other children's eyes, which adults frequently construe as naughty rather than as a developmental imperative). Up to this time, the child cannot release an object voluntarily -- the release skill is not yet in the child's repertoire; letting go is either accidental or accomplished by the child using one hand to pull the object out of the other hand (or by a second person literally wrestling the object from the child). However, somewhere between 12 and 18 months, the release response becomes so perfected that the child can stack one cube on top of another and even place raisins inside of a small-necked bottle (assuming the child does not eat them first). These tasks, cube-stacking and pellet dropping, are of course, favorite items on standardized developmental tests. At any rate, by

the time most children are two years old, they can hold a glass with one hand, they can use a spoon quite efficiently, they are beginning to point accurately in order to manually identify particular features in pictures, on self, or on others. In other words, they can respond appropriately to: "Show me the doggie," Where's your nose?", "Where's mommie's teeth?". Learning to hold writing tools is just around the corner, developmentally.

In terms of writing skills the intradependence of motor and cognitive skills is clearly evident as Tyler and Chandler (1978) point out.

> Learning to use a crayon illustrates this intradependence. The grasp of the crayon develops in two steps, as studied by Rosenbloom and Horton (1971). The first step is the "Tripod posture" in which the thumb, index and middle fingers function together as a tripod. Children as young as 2 years, 6 months of age use this posture, and by the age of 4 years, 6 months, all children should have acquired it. The second stage is the "dynamic tripod" in which the same posture is used but there are small, highly coordinated, intrinsic movements of fingers and hands. This is first seen at age 4 years, with the greatest number of children developing the fine movements of the fingers at age 5 years, 6 months. This development allows the child to depict (with increasing complexity) the world he is experiencing" (p. 182).

Such observations by Rosenbloom and numerous others contributed to the notion, popular between the 1920s and 1950's, (even into the 60's) that any kind of academic task, including writing activities and the teaching of writing skills, was inappropriate for children younger than 6, 7 even of 8 years of age. Skilled child observers and educators prior to that time had felt quite differently, however, as do many of the experts in the child development field of today. So now, let us switch to writing and early education. I will start with a brief sketch of two of the more famous of the historical early childhood educators and then turn to the recommendations of contemporary "experts".

One of the long-ago proponents of teaching young children to write was Johann Pestalozzi who developed the earliest systematically conceptualized approach to early education. Pestalozzi, among other things, is often best remembered for his "object lessons". Object lessons were opportunities for

children to study concrete items which they could manipulate. Pestalozzi, however, did not leave little children completely on their own to simply manipulate, explore and develop randomly. He offered a corollary kind of learning in which he broke learning tasks down into their essential elements (today we would call it "task analysis"). Thus, before it was suggested to a young child that he or she draw a picture of a house or a barn, or the sun coming up over the Alps, the child was first expected, day after day, to practice the drawing of curves, angles, and lines vertical and horizontal, slanting and sloping. In this fashion handwriting became a subdivision of drawing: letters were separated into there component parts and were found to contain elements similar to those found in drawing. It was obvious that young children learned easily and well because Pestalozzi's school became an educational showplace that attracted educators from all over the western world.

Three quarters of a century later, came another skilled and sensitive observer of young children, Maria Montessori, physician and educator. She, like Pestalozzi, believed that children learned through their senses, learned by manipulating concrete materials. These materials, which have come to be called didactic materials, she designed herself. She believed, too, that basic reading and writing skills should be taught concurrently with the development of language in very young children. Thus, there were many materials and activities that were at first indirectly related to writing and then, as the child progressed, became more directly related. Braun (1966) described the sequence as follows:

> "...writing was begun by using a geometric frame and placing the frame beneath a white paper where the child traced its depressed contour. Removing the frame the child proceeded to place the wood inset within the contour tracing on the paper. He then

filled in the outline with pencil. At the same point in time he was tracing alphabet letters made out of sandpaper with his finger while repeating the appropriate vowel and consonant sounds. Gradually the child began putting colored letters together to form words. Soon he began writing on the blackboard. (p. 15).

Montessori's faith in the ability of young children to learn far more than had ever been expected of them was fully realized. Writing (and reading) skills appeared to be acquired joyously and almost effortlessly by some 3 year olds, many 4 year olds, and almost all 5 year olds who had been exposed to the carefully sequenced sensory motor progression. There was almost a "spontaneous explosion into writing" (p. 286) in Montessori"s system where "Looking becomes reading; touching becomes writing" (p. 266).

Montessori appeared to have waxed rabid, however, at efforts to teach young children, or any child for that matter, to write through anything but such a carefully sequenced sensorial approach. Said she, in a translation of her original work, "...(teaching) graphic language bristles with difficulties in its beginnings... Think how irrational have been the methods we have used. We have analyzed the graphic signs rather than the physiological acts necessary to produce the alphabetical signs...; and a bit further on, on the same page... "Thus, for example, the analysis of writing into little straight lines and curves (italics in the original translation) has brought us to present to the child a sign without significance which therefore does not interest him, and whose representation is incapable of determining a motor response..." p. 311. That, according to Montessori, resulted in rapid exhaustion in the child as well as all sorts of "depressing feelings accompanied by such efforts and conduced to the production of imperfect and erroneous signs which the teachers had to correct, discouraging the child

still more with the constant criticism of the error and the imperfection of the signs traced." (p. 312).

Thus we see that two of our most illustrious early educators, while in agreement on many basic principles related to program for young children, were apparently diametrically opposed on the issue of the method for teaching handwriting. Similar disagreements and lack of concensus still obtain in the various contemporary viewpoints regarding early writing. Let me mention only a few of these to give a flavor of current thinking.

Chomsky (1972) subscribes to the notion of allowing young children to explore writing activities freely with no constraints regarding correctness or incorrectness of their efforts. This investigator sees it as quite appropriate that children "invent" their own early spelling systems according to how they perceive the phonetics of what they hear. Chomsky also urges a reversal of the "read first, write later" approach, arguing instead that many very young children actually teach themselves to read almost effortlessly when they are given free rein to tackle writing first. After describing the spontaneous writing efforts of 3-year olds Chomsky concludes, "The particular circumstances of the first writing will of course vary with each child, depending on his own timing and the situation in which the need arises." There is no doubt in Chomsky's mind, however, that allowing young children to make their own early written productions (uncritically, but positively, supported by the adults in the child's environment) is "true preparation for learning to read." (p. 125).

Rogers (1970) in describing the British Infant School approach outlines ways of providing opportunities for children of four to seven years of age to engage in early writing (and reading) activities"... feeling under a cloth for wooden or plastic cut out letters and trying to identify them without looking, making up words and sentences with letter tablets in a word-building box, drawing letters with a stick in the sand; printing them with an ink pad

and printing set..." --these are just a few of the ways described in the British Infant School literature that children are able to learn to write and to enjoy the learning experience. In many British infant classrooms young children are encouraged each day to write (or dictate if they cannot yet form letters) about something that is relevant to them. Consequently by the time they are six years old these children are often writing accomplished and creative stories such as the excerpt to follow written by a 6 year old boy. In part, the story about a man's adventures in the woods, went like this: "Once he went out into the woods and he met a fox and he shot the fox and he pulled the fox home. He had fox on toast." How satisfying it must have been for that child to compose so original a story.

Sylvia Ashton Warner, a noted New Zealand British Infant School educator, has long been a committed advocate of encouraging very young children to write (and to read) through what she called an organic process. Says Ashton-Warner in her pedogoguically charming book, Teacher (1963), "The whole exercise of creative writing, the reaching back into the mind for something to say, nurtures the organic idea and exercises the inner eye. It is this calling on the child's own resources that preserves and protects a little longer his own true personality." (p. 55). We will be hearing more about this organic writing process as Dr. Goetz talks about her adaptations of the system.

A number of other people have engaged young children in some highly creative (and controversial) activiites related to early writing. O.K. Moore devised what he called the responsive environment for teaching writing and reading in unpressured fashion to children of three and four years of age. Prominent among the teaching tools in Moore's program was the "talking typewriter" where children discovered for themselves how to form letters, words, sentences and stories. While Moore's project was primarily a research/demonstration effort of the early 60's, and though little is heard of it today, I expect that both typewriters and computers will come to play an increasingly dominant

role in helping young children to acquire the 3 R's.

During the sixties (the heydey of the early intervention movement) two approaches to the teaching of early academic skills were developed. One, DISTAR (originally developed by Carl Bereiter and Siegfriend Engelman, now the Engelman/Becker approach) was a systematically designed direct teaching/drill process for inculcating in four year olds basic school skills, including writing. The curriculum, referred to in the sixties as a "Pressure cooker approach" was viewed with horror by many early childhood educators; by others it was welcomed and heralded as the first breakthrough to occur in circumventing the cumulative academic passivity of who, at that time,were called culturally disadvantaged children. Over the years the protagonists and antagonists of the DISTAR method have continued their arguments. Both sides can produce evidence which they consider incontrovertible to support either the "for" or "against" stance (Evans, 1975). But enough examples, for the time being.

Let us ask now, where does all of this discussion of early writing leave us? Not very well off you may be sure, in terms of conclusive answers to such questions as "do we or don't we teach writing to preschool children," and if we do, "how?" We do know that biological readiness and experience go hand in hand. We know too, that most young children spontaneously engage in a great many different kinds of writing and prewriting activities. Too, we feel reasonably sure that preschool and day care teachers need to be tuned in to any signs of interest which their children display, and that they need to support these efforts in ways that will insure that children will want to learn more and more about writing so they may eventually set their very own thoughts down on paper. But how should teachers go about this critical task? How can they keep creativity and motivation alive and well, where writing is concerned, while not exerting pressure in ways that are developmentally unsound? The speakers that follow will be addressing these very issue in terms of various settings, types of children, and curriculum approaches.

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HANDWRITING: WHEN AND HOW

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Presented as part of a
Symposium on Early Writing:
A Developmental Approach at
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San Francisco, November, 1980.

HANDWRITING: WHEN AND HOW

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Handwriting is a necessity for all of us in our daily lives, even in this machine-oriented world. Typewriters do help eliminate the need for a handwriting skill, but they are not always available or practical. Handwriting may be required for something as simple as making a grocery list or as complex as writing a letter. In either case, writing helps one think and work through one's own plans. On the one hand, writing may help persons become independent and develop their own potential. On the other hand, writing may facilitate communication with others and develop friendships.

Reading and writing go hand in hand since one reinforces the other. We read what we write and write what we read. Durkin (1966, 1970) and Read (1971) found some children do write before formal instruction and early writing was found to precede interest in early reading. Based on this later finding, Durkin (1974-1975) conducted a language arts experiment in which equal attention was given to writing and reading for four- and five-year-old children. Most of these children did learn to write and read early and maintained their head start through fourth grade.

Since handwriting is important for personal and social growth and since it is related to learning to read, handwriting is being taught to young children today in more and more kindergartens and early childhood programs (Lamme, 1979). This trend merits concern for fear handwriting may be taught in developmentally inappropriate ways to these young children.

At any age handwriting is difficult to learn and requires much practice. If prehandwriting skills are not mastered first, handwriting is even more difficult to learn. Children who are pressured to learn to write before they have mastered the language, cognitive, physical and overall pre-academic preskills may develop poor writing habits and a dislike for the skill.

When Is a Child Ready to Learn the Handwriting Skill?

Generally speaking, children are not ready to learn to write until they have something to write about. They need observation skills to notice situations and a vocabulary to express what they have noticed -- that is their perceptual and cognitive developmental levels must be at this stage. Always remember, handwriting is for writing, not rote production of letters. More specifically, children are not ready to learn handwriting until they have mastered the preskills of small muscle development, eye-hand coordination, holding utensils, basic strokes, letter perception and orientation to the printed language (Lamme, 1979). These preskills have already been described in detail by the preceding presenter, and I will not repeat them.

In determining whether a child is ready to learn handwriting, special attention should be given to the difference in motor development between boys and girls. It is well established that females start developing in utero at a more rapid rate than males, and this acceleration in the rate of growth is maintained by the female ... to the age of 17½ years (Tibbits, 1976). At the age of two the girl is biologically almost six months older than the boy. This difference continues to increase until by the age of 13 the girl is biologically two years older than the boy. This accelerated physical development may lead to female superiority in wrist movement, fine finger movement and manual dexterity throughout childhood (Firester and Firester, 1974). However, because motor skills are also effected by inter-

action with the environment, this may not be the case. Yet because girls have advanced motor skills, they may learn handwriting more easily than boys. Due to their lagging physical development boys may appear to be clumsier and messier than girls when they are channelled into activities such as handwriting. In teaching handwriting to young children then, teachers should understand that some boys or girls, for one reason or another, may not have mastered the preskill of small muscle development, and therefore, they should not be pressured into handwriting practice.

Another factor related to physical development and handwriting is handedness. Children may not show handedness until 4- or 5- years of age. Therefore, they may begin to write using one hand and then the other. This should be allowed.

How Is the Handwriting Skill Taught?

First, it should be stressed that the teaching of writing skills should be in a relaxed and reinforcing situation. Tension is counter-productive to learning to write. The practice of writing should not be punishing for the child. A young child with a short attention span and need for movement should not be forced into long practice sessions. Tension-free practice can be promoted in incidental learning situations where the teacher is proud of the child's accomplishments. For example, practice is not forced when a table with cans of pencils, crayons and felt-tip markers and a variety of papers are always available for the child to use on a voluntary basis. A child's delight in the freedom to scribble at this table when that child chooses is the type of incidental practice to be encouraged. And scribbling, by the way, is extremely crucial to later writing; all the strokes used in later painting, drawing and writing are found in scribbling - 20 different scribbles.

The chalkboard is one of the best teaching tools for beginning handwriting (Tufo, 1980). Large muscle movement which has been learned on the playground can translate well to writing at a vertical blackboard. At first, writing in air in front of the board promotes the necessary rhythm and relaxed movement for fluent writing. Next youngsters do need to be shown how only the chalk and no part of the body should come in contact with the board. One advantage of the vertical chalkboard is that gravity assists the downward strokes. Another advantage is that mistakes do not become permanent reminders of one's inadequacy; they can be erased easily, and a fresh start always becomes available. Lines are not used on the board initially, since they demand precision of which the child is not capable at this time. Lines may be used later after some writing skill has developed.

After practice at the board a child may continue writing practice on an individual chalkboard placed on a table or desk horizontal surface. This is the typical handwriting position with the child's movement more restricted. Have the child begin writing with the index finger on the individual board before writing with the chalk. The next step is writing with a crayon, pencil or felt-tip marker on paper. Research is lacking on which one of these writing instruments is better than another for the beginner. It seems desirable to let the child select the writing instrument. Now the child must be taught to stabilize the paper with one hand while writing with the other. Again, lines are not used initially. When a child gains pencil control, lines may be introduced as an almost invisible crease in the paper, later followed by real marked lines.

Though definitive research is lacking as to whether manuscript or cursive should be taught first, young children are typically taught manuscript (sometimes called printing) initially. Manuscript writing is thought to be easier because it is made up of letters that, in addition

to being separated from one another in words, are themselves composed of separate strokes (Durkin, 1976). Furthermore, it is generally agreed that manuscript is more legible. Another advantage of manuscript is that it serves as a generalization media to reading since books are written in manuscript. The correct stroking sequence for manuscript may be found in Durkin (1976), Emery (1975), and Hainstock (1968).

The writing strokes whether on a vertical or horizontal surface, are introduced to the child with a descriptive count for manuscript and a descriptive and numerical count for cursive (Tufo, 1980). These counts reinforce the ways in which letters are formed as well as regulate movement. For example, the descriptive count for the lower case manuscript m would be, "down, over, over, m." This count is said rhythmically to promote a flowing movement. The child always names the letter after forming it to internalize the rhythm and form of the letter. The descriptive count while writing in air or with the index finger on the table allows for a relaxed practice before writing with the friction and confinement of the board or paper.

An example of the descriptive count for the cursive m would be, "over, over, over, m." The numerical count for the cursive m is "1 2 3 m". When children advance to cursive writing, rhythm becomes particularly important for writing the complete words, and the descriptive and numerical count now take into account the whole word. The descriptive count for the cursive word mine would be, "over, over, over, i, over, over, e, dot." The numerical count for the cursive word mine would be 1 2 3 4 5 6 7.8 The descriptive count may use the five basic strokes, mine over, i, e, around and under, as well as loop up, loop down, slant, swing, straight up and straight down. Teachers may decide on the exact descriptive count for each letter, but it is important to be consistent once the decision is made.

Typical children may need a minimum amount of practice with the descriptive and numerical count while special children will require more. Tofu (1980) in describing the descriptive and numerical count approach to handwriting emphasizes that the practical style of writing is not copybook perfection but rather legibility with ease and speed. He claims that an approach to handwriting that emphasizes slowly drawn perfect letter forms is doomed to failure. Children can only refine their letter forms after mastering the mechanics of muscular movement.

There are other issues to be addressed in teaching handwriting. Should lower case or upper case letters be taught first? Some preschool teachers teach upper case first because it seems easier to learn. But kindergarten teachers are adamant that children be taught lower case first since the reading encountered in books is basically in lower case. Emery (1975) suggests the compromise of teaching lower and upper case pairs together (e.g., h H; s S) for a mental bond between the two.

Should the written letters be labeled with their names or their sounds? As mentioned before, Tufo (1980) suggests the child give the name of the letter after writing it. On the other hand, Emery (1975) suggests the child give the sound of the letter after writing it. Montessori and the DISTAR programs use letter sounds (Aukerman, 1971). Naming the sounds should help the child eventually in learning to blend sounds into words. But letter names seem more appropriate in learning to spell words. Durrell (1980) emphasizes the phonemic service of letter names. That is in naming the letter one is often giving the phonic sound, especially if selected words are used. Only q, h, w and y do not have the letter sounds in their letter names. Research has not addressed which approach is better in learning to read or write.

Should children be taught abstract letters not associated with words they know? If so, one may follow Lewis' and Lewis' (1964) order of letters

from easiest to most difficult write: l, o, L, O, H, D, i, v, I, X, E, P, F, V, c, x, T, h, w, J, f, C, N, A, W, K, z, t, B, Q, s, n, Z, r, e, b, S, M, u, Y, d, R, G, a, U, k, m, j, y, p, g, and q. But Lamme (1980) cautions that teaching young children to write abstract letters not associated with words they know is beyond the developmental levels of most beginning readers. Young children learn best with concrete information: the word cat begins with c, not the letter c is used in many words. Letters are symbolic abstractions to begin with and should not be made even more abstract during learning.

Organic Reading with Incidental Organic Writing

Currently, I have an organic reading program in my preschool classroom. Child participation in the program is voluntary. The program consists of a teacher, a typewriter, blank spiral notebooks, unlined index cards, crayons, pencils, felt-tip markers, a child-sized table and chairs.

All children have their own books which are used each time they come into the reading area. When a child first sits next to the reading teacher, the teacher says, "I am going to type a word for you on this card, and then we will read it together." The child's name is typed and then read with the card on the table directly in front of the child. Let's say the child's name is Mary. Now the teacher says, "I am going to type something about Mary." She types, "Mary is a good girl," and they read it together. The child then pastes the two cards (1. Mary; 2. Mary is a good girl.) on the right-side page of a blank spiral notebook. The teacher then points to the left-side page and says, "Draw something here that reminds you of your words on your cards." After the first session the children are helped to select their own words and sentences. Eventually, some move from self-selected words and sentences to short stories.

Let's return to the left-side page in the children's books on which they may draw a picture cue to remind them of the words and sentences, or they may scribble, or actually write. Whatever they draw or write is acceptable, and

they spend as much time doing it as they wish. If the children do write letters or words, they may be taken from the right-side reading page or they may be other letters and words. It is the teacher's responsibility to gently encourage the correct pencil grip and to provide guidance for the correct stroking of letters with the descriptive count. (Show slides of pictures, scribbles and writing in the organic reading books.)

For a child who shows an interest in writing for a sustained period, a simple individualized handwriting book may be designed for that child. It will provide practice for basic strokes in relation to a child's favorite word in order to lead to the writing of that word at the end of the handwriting book. The handwriting books, like the organic reading books, should always be available on a voluntary basis. However, prompting children to work on their books is certainly permissible.

All the books, writing and reading, are to be given to the child to take home when they are completed. The making of one's book is very motivating. Children will keep working for the reward of taking home books that they have made themselves. In addition, they seem to take more pride and care in working on a permanent book than they do in working on a single worksheet. Finally, the books document the child's progress and allows the parents to share the pride in that progress with the child as well as the teacher.

Conclusion

To recapitulate, handwriting is a necessity for everyone in daily living. Reading and writing go hand in hand. If given the opportunity, some young children will show an interest in reading and writing. That interest should be nurtured because it may lead to a head start in reading and writing which will be maintained in later school years, given appropriate curriculum adjustment. However, the teaching of reading and writing to young children should take into account their perceptual, cognitive and physical developmental levels to avoid frustration and poor habits which could lead to dislike for these skills. Responsible early childhood educators must use a developmental approach in working with young children.

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Fostering Pre-writing and Writing Skills in a Full- or Part-day Program

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Presented as part of the Symposium: Early Writing: A Developmental Approach, at the National Association for the Education of Young Children Annual Conference, San Francisco, November 22, 1980.

Fostering Pre-writing and Writing Skills in a Full- or Part-day Program

Joan Reiber

Many preschool-age children appear ready for writing instruction but actually lack the necessary prerequisite skills. They may attempt to write the capital letters in their first name but are unable to cut with a scissors or draw a diagonal line from a sample. If parents or teachers mistakenly assume that these children will benefit from formal writing instruction, poor writing habits may develop that are difficult to change later on. Attempts at handwriting at any age should never be discouraged. There are some basic skills, however, that a child should master before progressing to the language areas of reading and writing. Pushing a child before he or she is ready may cause frustration for the child and the teacher, discourage further interest in writing, as well as develop faulty writing habits.

A part or full-day child care program is an ideal environment in which to foster pre-writing and writing skills. There should be a wide array of activities which help children develop small muscle development, eye-hand coordination, and visual discrimination skills. Children should also be exposed to printed words that are written. There should be numerous opportunities for children to understand and repeat, in proper sequence, what they see or hear. Pre-writing and writing tools such as crayons, markers, chalk, and pencils should be readily accessible to children throughout the day. Children should be encouraged to practice the basic strokes which are found in all manuscript letters. Once children are proficient in readiness skills they will then be eager to correctly print letters in their own names as well as other letters and words.

What has just been enumerated can be divided into ten skill areas that are essential for developing pre-writing and writing abilities. These skill areas will be described in detail later in the paper.

Early childhood programs have a responsibility to prepare preschoolers

for the many challenges children will face upon entering kindergarten or first grade. In addition to providing children with a warm, loving and social environment, preschools and day care centers must stimulate intellectual development, curiosity and reasoning. This can be accomplished if teachers prepare the daily program carefully and comprehensively.

In order to plan a successful program which meets the needs of all children, teachers of preschoolers should use some type of assessment or screening test that can be easily administered at the beginning of the year. Ideally, teachers should develop their own screening tests, for children are different and the importance or uselessness of certain items will vary with each program. If a teacher is new or inexperienced, there are many criteria-referenced tests which will give caregivers ideas when developing items for their own tests. The Learning Accomplishment Profile, also called the LAP, is one assessment scale that teachers might want to examine. Items for the LAP were taken from thirteen existing tests and placed into six developmental areas: gross motor, fine motor, language,cognitive, social and self-help. By using only 8-12 items from each developmental area, a teacher should be able to construct an effective screening tool which is manageable and functional for implementation in the classroom. There are three reasons why reference is made to the LAP rather than other assessment tests. (1) teachers need only to purchase one test rather than many, (2) items on this test will give teachers ideas for program planning, and (3) it has a sub-category under fine motor called writing. Another reason for mentioning assessing is due to the current emphasis placed upon it in the new federal requirements for federally certified day care centers. Today's teachers should be screening children and investigating ways to keep individual child progress reports up-to-date.

As stated previously, there are ten skill areas that can either assess and develop children's readiness for writing instruction, or involve actual writing practice.

1. The first skill area involves eye-hand coordination.

This skill area is the foundation for the development of future writing ability and for obtaining success in the other nine areas. A young child gradually gains more and more complex motor control to accomplish what the eye and the brain will to be done. Infants enjoy grasping and then dropping many small items. Young toddlers spend hours putting materials into containers, then taking them out. Two year olds may first view a puzzle piece as something to pick up and throw. After helpful guidance from an adult, they are able to put a few pieces together to form a picture.

Teachers need to provide a variety of exciting materials to help children enhance their eye-hand coordination. As many preschool and day care centers focus on this skill area, it is frequently one of the strongest segments of their program.

Manipulatives come in all sizes, colors, and range of difficulty and help to enforce small muscle development. Many materials such as lego snap together to form structures. Other eye-hand activities children enjoy are stringing beads, spooning beans or rice from one bowl to another, water play using containers and funnels, sewing, typing, and playing with puzzles. Table blocks can be used on the table or on the floor. Dressing baby dolls requires very skillful coordination.

Art activities are a must in every toddler and preschool program. Painting is a vital and fun activity and challenges any child any age. By moving paint and paper to the table top, the floor, and to the easel, different muscles come into play.

To observe how well developed eye-hand coordination is, look for children who consistently hammer nails straight into wood, cut easily with scissors or build tall structures without knocking them down.

2. The second skill area concerns <u>practice using pre-writing and writing tools</u> Early child care programs should have ample sponges, brushes, crayons,

magic markers, chalk and pencils. After children have had adequate exposure to these tools, they should be shown how to properly hold them. If correct handling proves too difficult young children may need additional practice with the tools and further adult modeling or instruction.

Young toddlers enjoy crayons and markers, and need a great deal of experience scribbling in an aimless way. Actually, most youngsters prefer markers, for crayons require such pressure to produce bright colors.

Chalk and chalkboards are a must for early childhood programs. Chalkboards should be hung low on the wall. This allows children to stand while drawing long lines or large round circles. Teachers should realize that chalk is not held the same way as pencils. At times teachers may want to draw special shapes such as ovals, circles, and straight lines on the chalkboard. Children may enjoy copying these shapes and lines, or drawing their own.

Brushes are usually used in creative ways rather than as a tool for writing instruction. However, it is through painting that children begin to draw the basic strokes that will be used for writing at a later date.

Children enjoy using crayons to trace "paths" which have been drawn on paper or cardboard. Either crayons, markers or pencils can be used to trace alphabet and shape stencils. Pencils should always be available, for children will select them when they are ready. Pencils are the most difficult tool to use effectively and frequently children hold them incorrectly.

Although the scissors is not a writing tool, many educators feel that a child who cuts easily is ready for writing instruction.

3. The third skill area is <u>visual discrimination</u>

As early as possible young children will benefit from guidance in visual

perception. They need numerous experiences sorting, recognizing forms, noticing likeness and differences and attaching meaning to what is seen. They need practice matching, recognizing, and labeling colors and shapes. When used with matching design cards, geoboards, parquetry shapes, pegs and cubes are excellent choices for developing visual discrimination.

4. The fourth area involves contact with printed words

Toddlers and preschoolers need many experiences that demonstrate a relationship between written words and expressed spoken words. Certainly having books or stories read to them is one of the most effective ways to establish this relationship. As teachers read and re-read stories they should let the children see the page and when possible they should run their finger under the sentences they are reading. Gradually there will be an awareness that words are comprised of letters, and letters represent sounds. Name tags on lockers or tables help children come in contact with words that have special meaning to them. Teachers should write words in the children's presence. One excellent exercise is to ask children if they want to say something about a painting or drawing they have finished. Teachers then write the child's sentence at the bottom of the art work. Certainly birthday charts or helper charts convey printed words in a meaningful way. Labeling objects around the room such as tables, chairs, clocks help children see the printed words next to the object it represents. Because people use more than one word when they speak, some teachers may want to use sentences rather than words. When this is done, the key word can be put in a different or brighter color.

5. Visual and auditory memory comprise the fifth skill area.

Children need to recall what they have seen or heard. They need to develop the ability to store and retrieve information at will. When preschoolers do not have the ability to remember details they lose interest before the end of the information is given.

There are many opportunities for preschool teachers to develop visual and auditory memory. Teaching children songs and nursery rhymes enhance listening

skills and memory. Remembering the correct sequence for the alphabet song is just one example of auditory memory. A game such as "What is Missing?", either with cards or with concrete objects, is an enjoyable way to teach visual memory. Concentration, played with 2 - 20 pairs, is another popular memory game. As children become more proficient, they will be able to follow complicated oral directions, or repeat a story in the right sequence. One pre-writing goal may include having the child arrange letters is his or her own first name from memory.

6. Knowledge of some letter names is the sixth skill area

For numerous reasons, reading is assumed to be directly related to writing. Delores Durkin in her book, Teaching Young Children to Read, states that a possible achievement goal for teaching writing is to teach letter names. While knowing the alphabet is not always a prerequisite skill to handwriting, the ability to recognize alphabet letters is necessary for children who wish to write words such as their own names.

Television programs such as Sesame Street have produced interesting ways to teach alphabet letters. There are also challenging ways for teachers to expose children to letter names. They might include: playing an alphabet game, learning letters through the use of pictures which begin with a specific letter (phonics), writing letters in lard or sand, or making letters out of clay or with blocks. Some teachers use the tactile approach, such as suggesting that children trace sandpaper letters with their fingers as they repeat the letter names. Other educators use letter cards and rely on visual memory. Many teachers combine all these methods and also have children form letters with their bodies or write letters in the air using their fingers. Varying the approach when teaching letter names will enable teachers to individualize their program and will more adequately meet the needs of all the children.

7. The seventh skill area involves practicing basic strokes

Experts agree that manuscript writing, also called printing, is the best form to use when instructing beginning writing. The separate strokes make it

easier for children and they can take their time with each letter. There are two basic strokes for capital and lower case letters, circles and straight lines. Children need a great deal of practice making straight, slant and curved lines while they draw or paint. Gradually they will produce fences, houses, teepees and so forth. At an early age they learn to draw lines and circles which eventually become such objects as people, faces, trees or suns.

Children can practice basic strokes with their fingers in sand, salt or on a piece of paper, or by making strokes in the air. In skywriting the teacher demonstrates a stroke in the air and the children imitate what they see. Children can write basic strokes with crayons, chalk and pencils. Three, four or five year olds who can draw an accurate curve or straight line from a sample are often ready to write letters.

8. Following and understanding oral directions related to writing is the eighth skill

A child's vocabulary comes from experience and practice, and from adults who listen and respond. A child needs an adequate vocabulary to express ideas and to put words into a sentence before being able to understand oral directions related to writing.

In the early stages of development, a child will place herself or an object in a particular location when this direction is given by a teacher. An example of an oral direction is to place an object or oneself on top of, inside, under, or next to another object. Before writing instruction begins, a child will need to be taught such things as top, bottom or middle as they relate to objects or to a piece of paper. Children should also know that writing begins on the left side.

9. Correctly printing letters of one's first name is the ninth skill

Teachers can stimulate interest in writing through instructing children how to write their own first name. It is easier for children to learn if both teachers and parents agree that only the first letter should be capitalized. Adults should use correct strokes when teaching or writing letters of the alphabet. It is also

crucial to teach children to "go down" when writing straight lines found in letters.

Some children will want to start writing at an early age and have the coordination and control to do it well. Teachers can help children print their names by encouraging them to write the first letter of their name on their art work. Teachers then print the remaining letters. Gradually, children can be expected to write the first two letters, then three and so on, until they are writing all the letters of their first names without assistance. Even if teachers are not willing to teach the writing of alphabet letters as words, they should teach children to write their own first names. The children will be thrilled and the teachers will be able to make certain that letters are being written correctly.

10. The last skill area involves correctly printing letters and words

Writing is natural and can be pleasurable for children if there are no pressures for perfection. As said before, the use of the blackboard is ideal, for it has boundless space and children enjoy using chalk. Some letters are easier to print such as the "L", "O", "H", and "T". From the beginning it is best to help children print the basic stroke of the letters using the right direction. Teachers can model one stroke of a letter at a time while verbalizing the correct direction of the stroke. An alphabet chart which shows correct directions for letter strokes should be present in the language art area and near the blackboard. This will enable all adults, teachers, aides and volunteers to consistently use the same letter strokes.

Children may trace or copy letters or words according to preferences. Copying is often preferred by teachers and children for there are no lines to stay on. Some children will enjoy copying one word a day on the blackboard. The word can be written at the top of the board. Teachers should choose words that appeal to children or were selected by them. If paper and pencil are used give half sheets to practice letters or words. Meaningless drill is never necessary and has no place in a child care program.

In summary, in some child care programs the first few skill areas mentioned, eye-hand coordination, using writing tools, and visual discrimination activities comprise the program. These areas are the basic foundation for a well planned pre-writing sequence. Other child care programs offer more challenging pre-academic options for children who are ready to profit from activities which are more directly related to writing ability. If early childhood teachers truly individualize their curriculum there will be countless opportunities for both.

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PROGRAMMING INITIAL WRITING

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Presented as part of a
Symposium on Early Writing:
A Developmental Approach at
the National Association for
the Education of Young Children,
San Francisco, November, 1980.

Introduction

Although writing is an acquired skill and within reach of most children, it can not take place without the activation of certain muscles in the arm, wrist and hand. The refinement of these muscles, known as small muscle coordination, is essential to being able to write. Writing movements should be smooth, quick and spontaneous. This requires the hand to be capable of fine prehension and capable of adopting a specific position. Movements in the hand must become precise, which is something the child develops gradually with practice. Finger movements must be differentiated from movements of the wrist and arm while the wrist and arm must be capable of slight movements while the body keeps still (Ajuriaguerra and Auzias, 1975).

The writing literature over the last thirty years suggests beginning training in writing and reading at about the same time (Ames and Ilg, 1951, Durkin, 1966, and Wright and Allen, 1975). Also, it has been noted, by the age of three some children, through imitation, are able to produce partially correct representation of letters or number forms without direct teaching. However, some older children, for numerous reasons, are unable to produce anything other than aimless scribbling (Ames and Ilg, 1951). Other younger children may be "at risk" or have specials needs with regard to continuity of small muscle development. All of these latter types of children would benefit from being taught in a direct way.

In the event formal handwriting is included in a preschool curriculum, it is important to keep in mind, all children will not enter the writing program at the same time. Placing a child in a formal handwriting before the child has acquired the prerequisite skills for handwriting may result in failure and frustration. On occasion, it could also force the child to form

unsatisfactory writing habits that are difficult to correct (Barbe and Lucas, 1975). The importance of individualizing the handwriting curriculum, it is necessary to first make an assessment of each child's skill level, then set individual goals.

A selection of words to use in a writing program for young children should include words the child can make some association with based on past experiences. Most preschool children are exposed to many printed words through TV, books and the environment. Other symbols to use in a writing program might include those that have a direct relationship to the child. Familiar words should help a child perform at a higher level. Teaching young children to write abstract letters not associated with words is probably beyond their comprehension of the importance of the task.

While mose readiness programs make an effort to teach legible letter formation, other known components of legible handwriting are usually not part of most handwriting programs (Wright and Allen 1975). With the exception of letter slant (which should be an individual choice of style), all other components such as proportion, size of letters, spacing of letters, correct strokes and alignment of letters should be included in a writing program for young children.

Young children throughout the universe tend to make number and letter reversals when they are beginning to write. It is suggested that the number and letter reversals that appear in young children's writing is perhaps a common "stage" that most children go through in learning to make the symbol correctly. It is further suggested that it is better to make a number or letter reversed than it is to have no perception of the symbol at all (Ames and Ilg, 1951). One possible explanation of why number and letter reversals are frequently observed in young children's writing may be due to an interaction of the left-right concept not being completely acquired and poor training procedures. To prevent such reversals the teacher should monitor carefully and

control (in some manner) the child's initial responses when forming parts of letters and numbers.

This paper will suggest a particular way of controlling a child's initial responses when learning to make letters. This procedure is designed to eliminate errors and reversals so that a child can be successful regardless of the child's conception of the left-right orientation. This paper also presents a practical method for teaching "at risk" and children with special needs how to write their names.

Method

The materials being presented show the responses children made when stimulus shaping and fading were used as procedures to teach handwriting. The four children were 3, 4 and 5 year olds who attended a morning preschool session with fourteen other children four days a week. The children were enrolled in the Edna A. Hill Child Development Laboratory in the Department of Human Development at the University of Kansas.

The handwriting task was one of three tasks presented daily during preacademic time. Preacademic time was a time during the morning when the children worked as a group on individualized materials for approximately 30 minutes under the supervision of one teacher. Other preacademic tasks consisted of instructional materials for the curriculum areas of: Visual discrimination, Language Arts, Fine Motor and Numbers. Only those materials for one curriculum area was presented each day. For instance, on Monday each child in the group worked on three different visual discrimination tasks. On Tuesday, each child received three different Language Arts tasks. The same was true for Wednesday and Thursday when materials for Fine Motor and Numbers were presented. Although the main emphasis on teaching during preacademic time was individualized instruction, the handwriting task was initially presented as a group activity.

Before presenting any handwriting materials using the programming procedures, all children were pretested. The pretest was an assessment of:

1. Being able to folow verbal instructions given by the teacher,
2. The child's hand preference,
3. Each child's control of paper and pencil,
4. Which children could and could not write their first name,

5. How letters were made, and

6. Placement of letters on paper.

Materials used for the pretest, for probes during training and posttest were the same and consisted of white primary lined paper that was 2 inches wide and 8½ inches long. The children also used medium sized primary pencils without erasers. Before the children wrote their names, the teacher instructed the children to put their hands in their lap and the teacher very quickly placed the small piece of lined primary paper and a pencil in front of each child and instructed the children to, "pick up the pencil and write your name as best you can." During pretest and probe sessions the children did not receive any teacher feedback as to the correctness of their writing, but were praised for making an effort to write their name and for doing a good job of keeping the paper in front of them when writing.

Immediately following the pretest - assessment session, the given name for each child was programmed. The following slides will show how each letter in the given names were altered so that across trials the child was required to remember the starting place and each stroke of a letter. Looking at Figure 1, you will see an "x" on the first "B" and an "x" on letter number 23, the first lower case "r". The "x" on all letters were used to indicate to the child were to start each letter. The start cue was slowly removed then portions of the letter formation were also slowly removed across training sessions.

Figure 2 shows a sample of the Standard procedure used to fade letters. Beginning at the top left you will see that the configuration of the letter E consists of straight lines. When programming steps for letters like this, the first line to be traced (the vertical line of the E) was altered across training sessions by removing ¼ inch portions. The second set of 3 horizontal lines were first dashed, then changed to dots which reduced in size across training. Looking at letter number 22, you will see the lower case "U",

which is a two stroke letter. The procedure for programming letters like this was, to slowly shorten the first stroke by removing ¼ inch portions. If the first stroke was not a complete straight line, the latter half of the beginning stroke was programmed by first dashing that part of the line, then dotting the curve, with the dots decreasing in size across the training.

Figure 3 presents an example of the procedure used to program single stroke curved letters, such as the "S". Once the start cue, the "x", was faded the configuration of the "s" was changed to dots. Looking at letters 7-10, you will see how the size of the dots slowly changed. Once the dots had been decreased to a desirable size the configuration of the "s" begins to change. Letters 11-16 shows that the size of the dots remained constant while the configuration changed by removing every other dot. Looking at letters 17-20, you will see the last programming steps for the "S" which was to fade the size of the dots. We have found that the "S" is a fairly difficult letter for children to write. Consequently, rather than removing the initial image of the line, as in other letters, we kept the complete structure of the "S" through the use of dots and then removed (slowly) the density of the structure. This appeared to be more successful in helping the child to make the initial upper curve of the "S" in a curved manner. The tendency is for children to flatten this curve rather than keep it rounded.

All children began the name writing training during the same session. The materials used during training consisted of four 2" X 4" pieces of primary lined paper with only the letter being trained in black manuscript. The child was also presented a 2" X 8½" piece of primary lined paper with the letter being trained and all untrained letters in black manuscript.

During each training session each child had four trials where they were trained to write letters at different steps of the program and on the last trial of each session each child wrote all the letters in their given name.

At the beginning of each training session, the materials were placed in

front of the child. At the beginning of the first training session, the teacher modeled for the group how to manipulate materials, the function of the "x" and verbally state its function. The teacher modeled the writing response for each child on a separate piece of paper. The children were then instructed to "pick up their pencils". "put the pencil on the 'x'," and make the first letter in their name. After the first training session, the only instruction necessary was a reminder to "put the pencil where the letter starts."

Figure 4 shows the start cue for the letter "B". The "x" was slowly removed during the first training session. Figure 4 also presents a sample of the materials presented and the child's response for each trial during that training session.

In situations where there is a high probability of errors, immediate feedback on performance is very important. Each child receiving name writing training was taught to use plastic overlays to check their writing of the first and third letters in their name. A letter was considered to be acceptable if all parts of the letter formation was within the lines of the overlay. Figure 5 shows an example of the plastic overlays for two of the children. Although the plastic overlays provided the most consistent immediate feedback, the teacher also put forth an effort to frequently praise appropriate writing responses. The teacher also provided corrective feedback on letters.

Figure 6 shows the chaining of previously trained letters when the third letter "g" was being trained. Only the "g" is programmed on the materials given to the child in the first 4 trials. On the right, however, you can see that the child wrote in the letters E and U before completing "g". This is because one the configuration of a letter was completely removed, the child continued to write those letters before writing the letter being trained during that particular training session. Besides training a child to remember strokes of letters, the program trains them to remember a sequence of letters.

Figure 7 and 8 represents a child's performance on pretest probes, probes during training, and posttest probes when a program was used as a procedure to teach name writing. The first sample in Figure 7 represents the child's performance on the pretest which was given prior to any training. Samples 2-7 shows the child's response on probes during training and the letter being trained prior to each probe. Sample 8 presents the child's writing response after a four week break. The child did not receive training for four sessions prior to this probe. Training was resumed immediately following this probe with the child being trained to write the second "t" for four sessions. Sample 9 presents the child's performance on the probe following that training. Sample 10 shows the child's performance after all letters in the child's name had been trained. Prior to probe 9, the child wrote his name daily and was then probed.

During probes each child was presented a blank sheet of primary lined paper and instructed to write their names as best they could. The children did not use the plastic overlay to check their letters. The teacher praised the children for making an effort to write letters in their names but the teacher did not give corrective feedback or direct commendations to the child that were related to correct letter formation. Each child was trained to write individual letters in their name for four sessions and were then probed.

Figure 9 and 10 - Shows another child's writing performance on pretest and probes during training. An assessment of the child's pretest performance indicates the child could write her name, but wrote very small. The child did not demonstrate skill in placement of letters and used all upper case letters when writing. Probe 2 shows that after eight training sessions, there was an improvement in the child's writing. The child's handwriting skills continued to improve with training as shown by other probes in this slide. Figure 11 shows how the start cue was faded and that all letters were faded at the same time, since the child already knew how to make each letter. The main discrimina-

tion being taught here was to associate the terms "upper case" to the top word of each set, as the child traced over the model; and the words "lower case" as the child traced over the lower word of each set.

Figure 12 and 13 shows training steps 5-8 of the program used to train the discrimination between upper and lower case letters.

Figure 14 and 15 presents, a sample of the materials used during a training session. Fugure 14 shows an example of the materials presented to the child and Figure 15 is the child's response. During each training session, the child always wrote the upper case letters first. During the first session of discrimination training, the child was told which lower case letters were the same as the upper case. At the end of the second discrimination training session, the child was instructed to first point to the upper case letter then point to the matching lower case letter. Thereafter, the child was asked to label two sets of the letters after the name had been written in both upper and lower case letters.

Another child was also taught to use lower case letters when writing his name. (Figure 16) Reading from left to right you can see the child begin to use lower case letters more frequently once the letter had been trained. The child's performance on probe 4 (sample labeled as 5) may indicate that when letters appear more than once and the letter formation is the same, it may be possible to train the writing of that letter only once. When probe 4 was made, the child had been trained to write the first lower case "e" and the training generalized to the second lower case "e" not yet trained.

There may be some indication that the procedure benefits some children in other ways. That is, some children may learn to write some letters just from tracing For instance, in Figure 17 on probe 5 (sample #6 of this fugure), when the "U" was being trained the child began writing the "a" and "n" in her name. On probe 8 the child wrote all the letters in her name even though only the first three had been trained. The tracing of untrained letters occurred

regularly each day as the last trial of the handwriting session. Here the child not only wrote what had been trained that day but also went on and traced over the rest of the name that appeared on that trial. This was given to remind children that they were learning to write their whole names even though the daily training was on individual letters.

Summary - Conclusion

Stimulus fading and shaping appear to be effective procedures for training young children to write. After formulating a method to program letters, individualized steps in a writing program for each child were developed and then presented as a group activity during small group time. Each child in the group was trained to write letters in their name in an orderly sequence and all children learned to correctly label those letters in their name. Once the children had been taught to write their names using this programming procedure, the procedure was then used to teach other writing skills.

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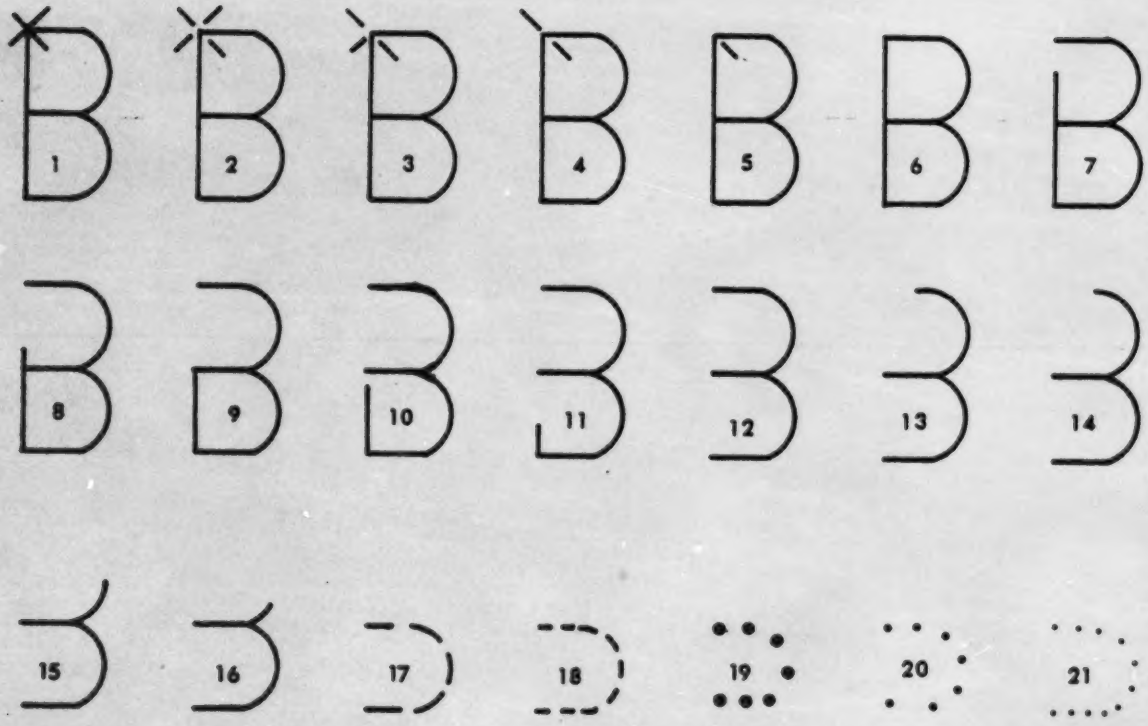
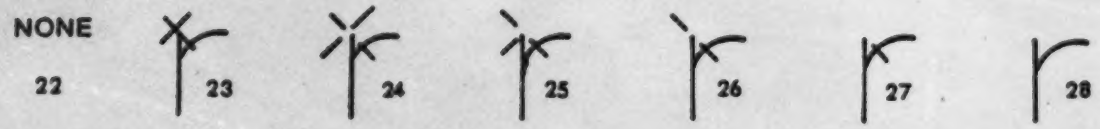
PROGRAMMED STEPS ON LETTERS B AND r





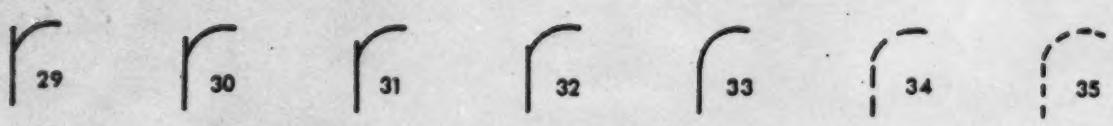


Figure 1

PROGRAMMED STEPS ON LETTERS E AND u

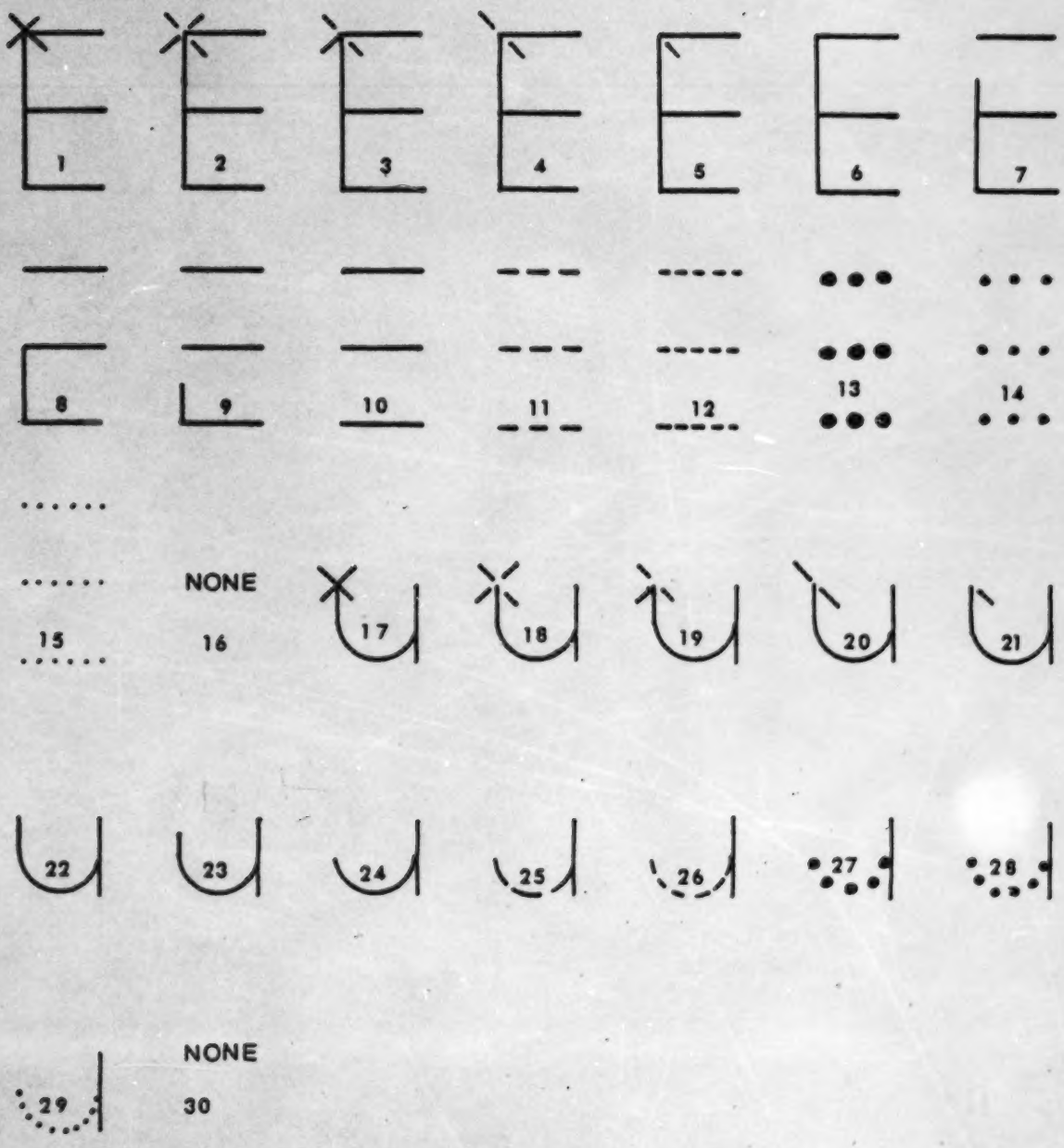
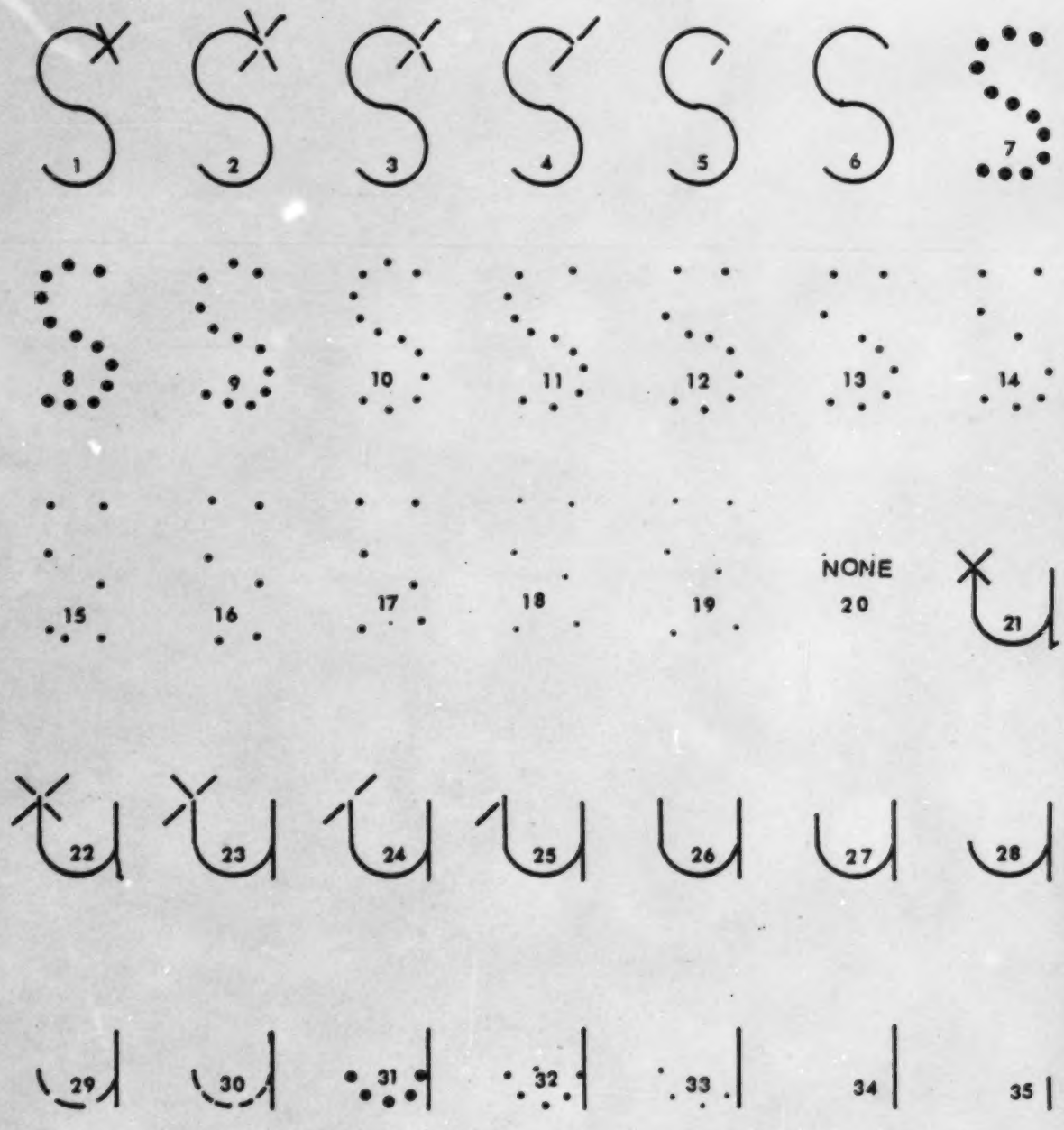


Figure 2

PROGRAMMED STEPS

ON LETTERS

S AND u

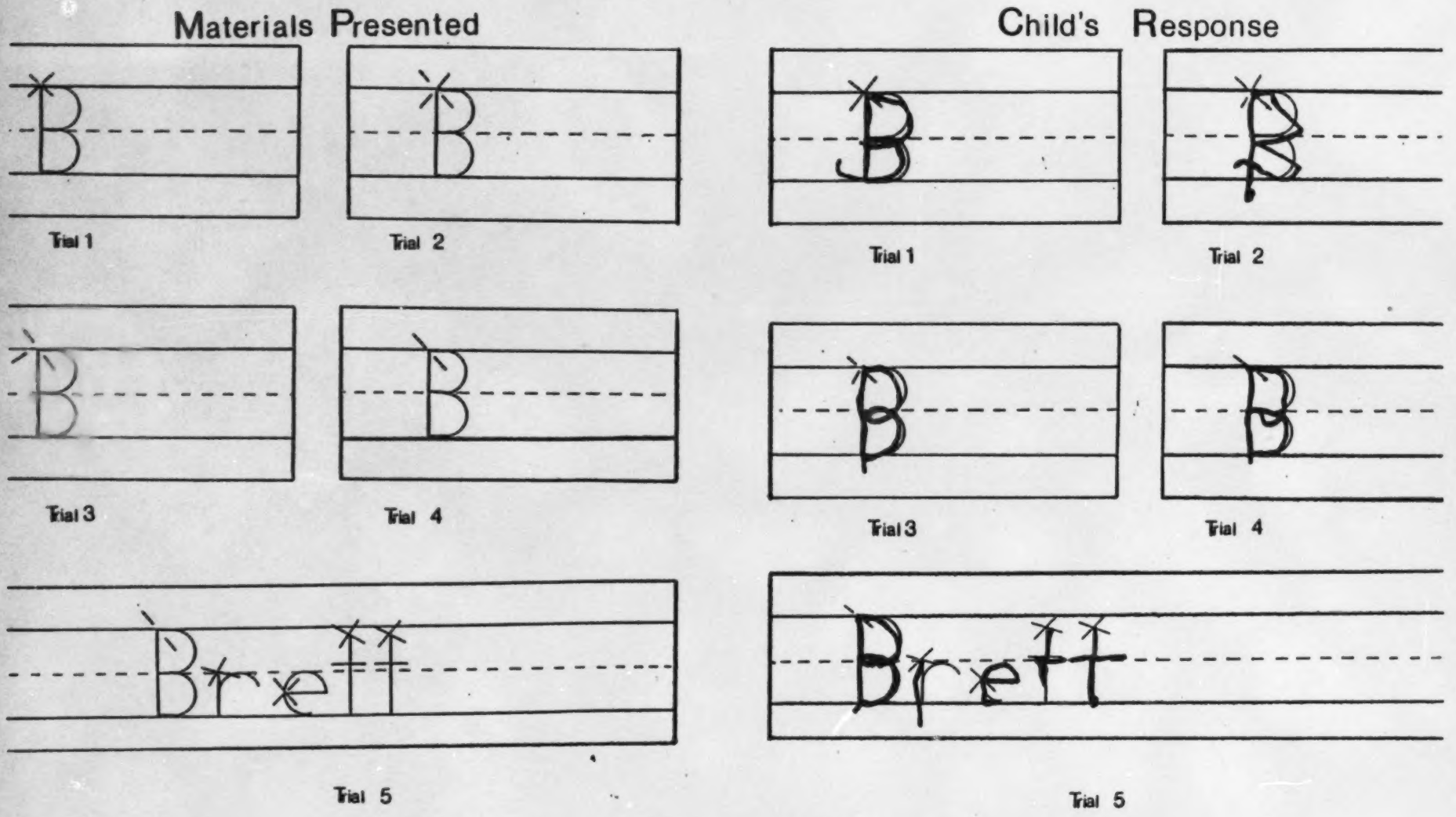


NONE

36

Figure 3

FADING START CUE



Session 1

Figure 4

Plastic Overlays

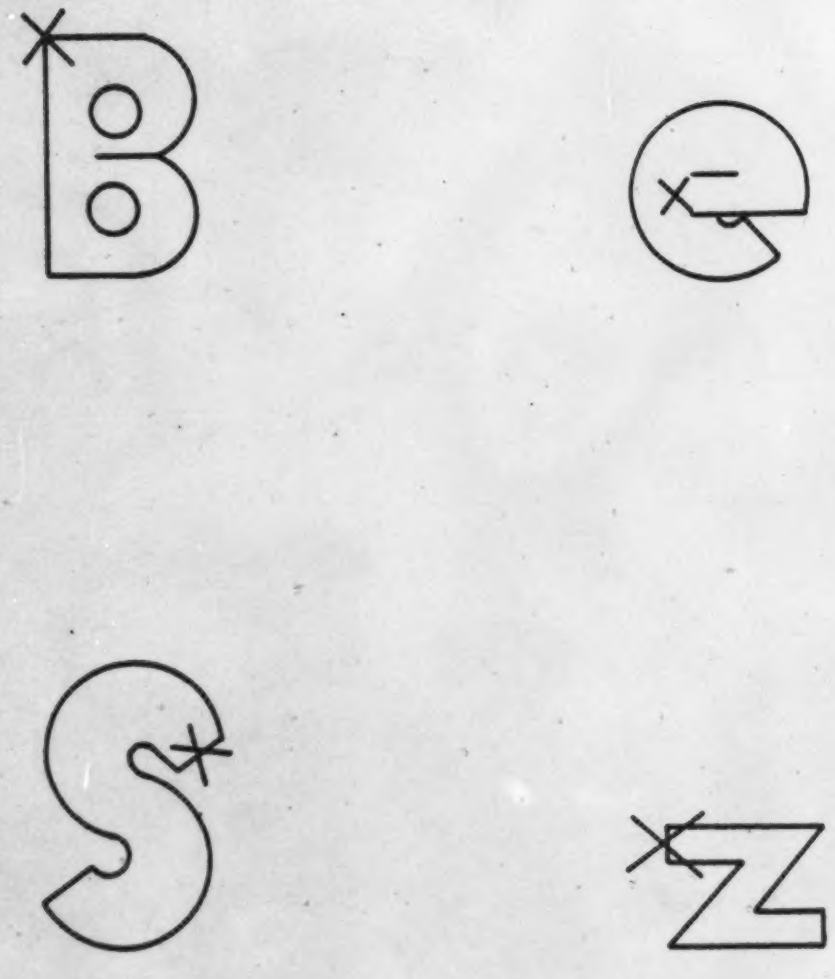


Figure 5

FADING THIRD LETTER AND CHAINING
(a complete training session)

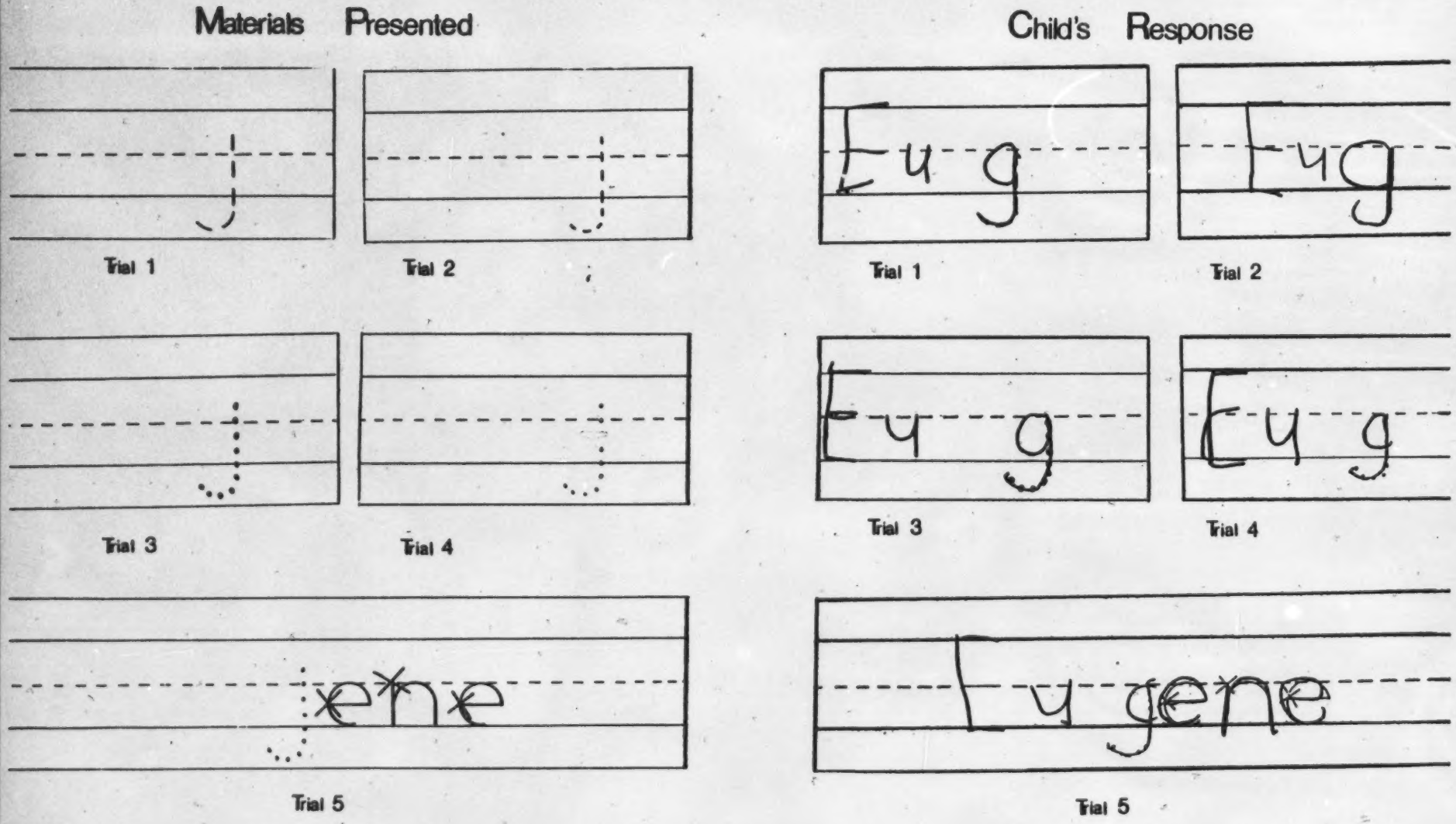
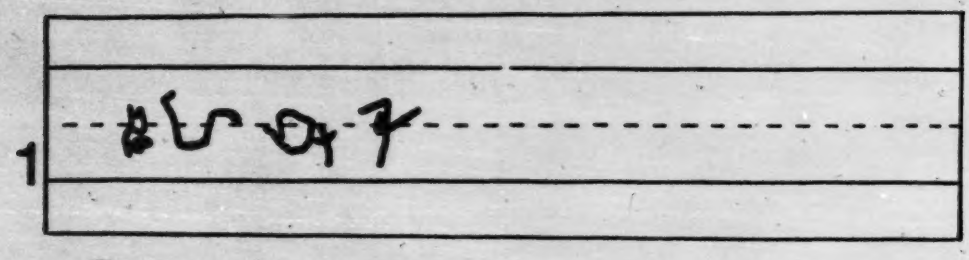
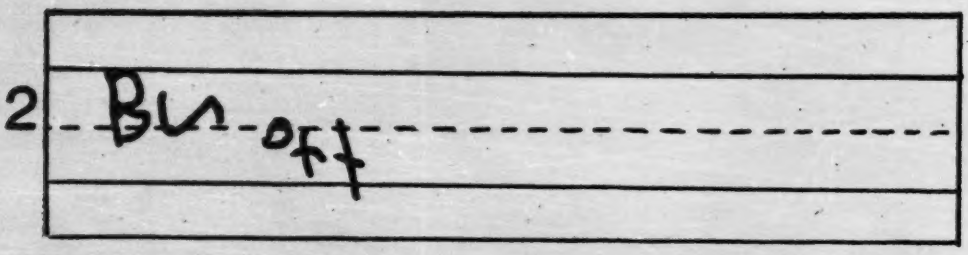


Figure 6

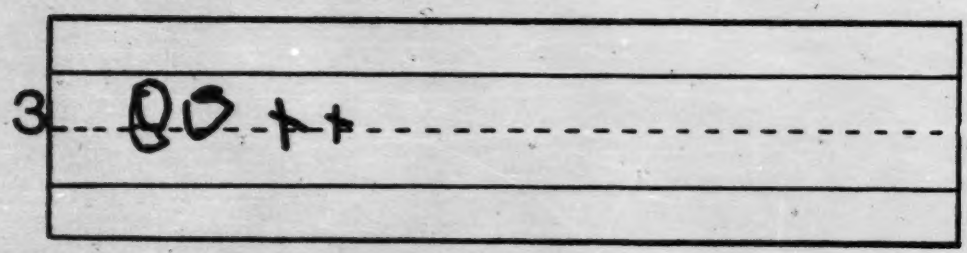
Probe — Pretest



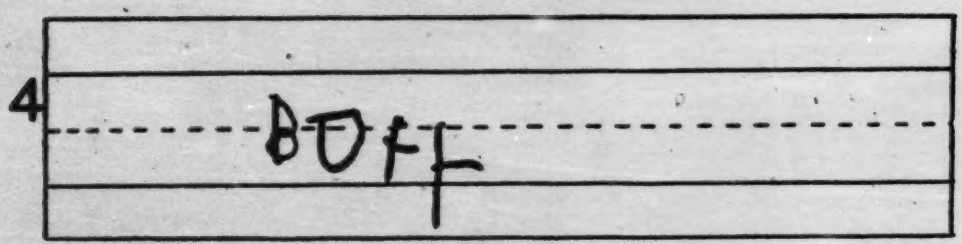
Pretest: Assessment



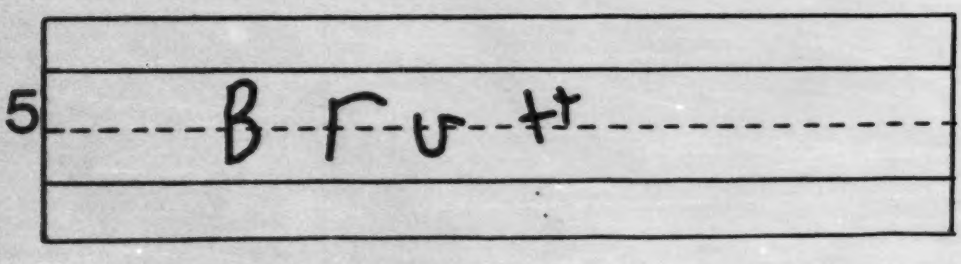
Probe 1: B Training



Probe 2: Revised B Training



Probe 3: r Training

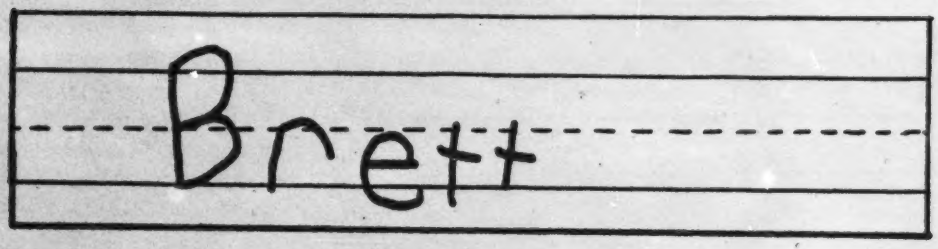


Probe 4: e Training

Figure 7

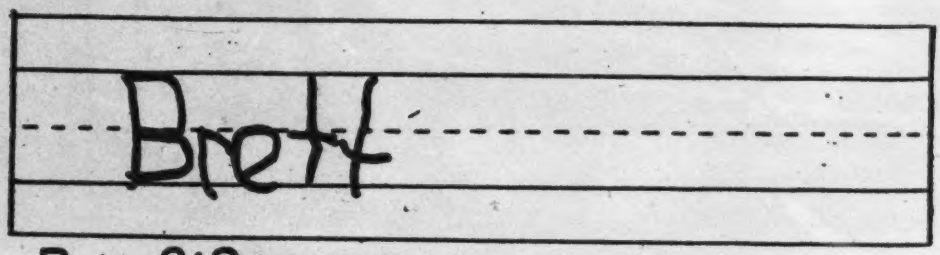
PROBE - POST TEST

6



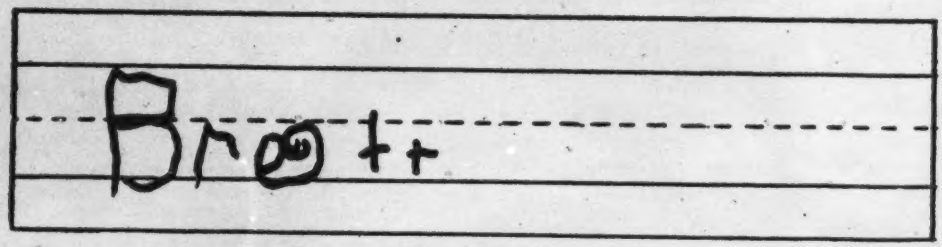
Probe 5: t Training

7



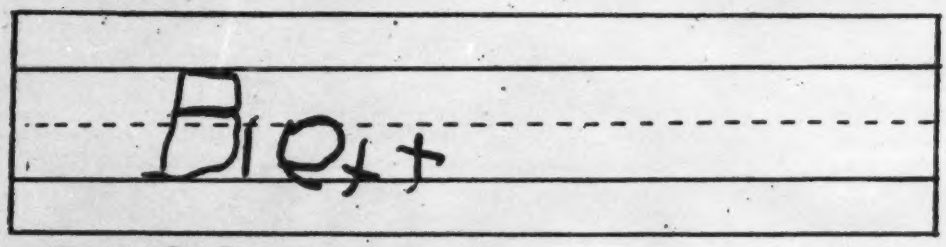
Probe 6: Second t Training

8



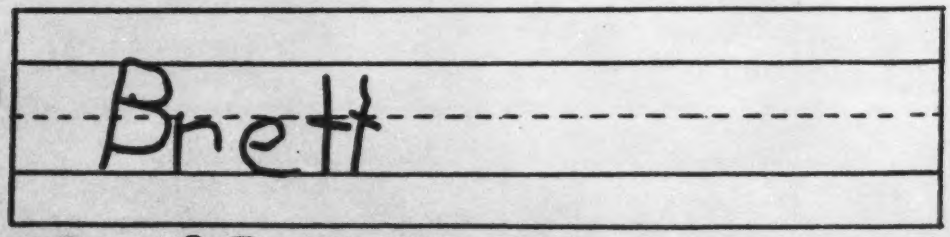
Probe 7: 4 Week Break

9



Probe 8: Second t Training

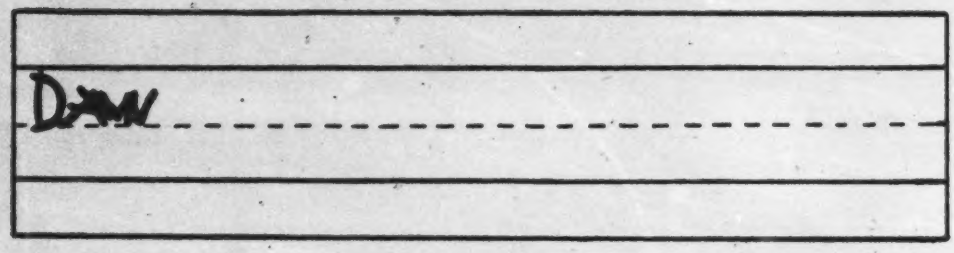
10



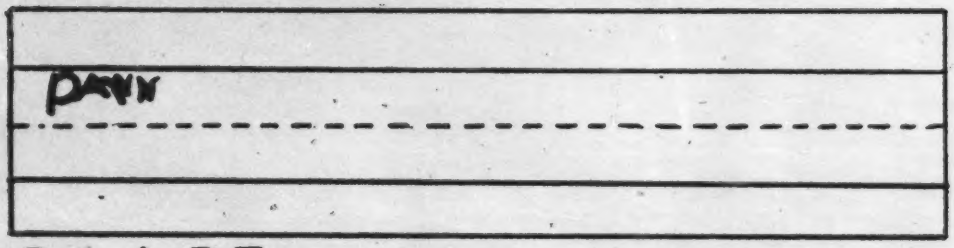
Probe 9: Practice Writing Name Daily

Figure 8

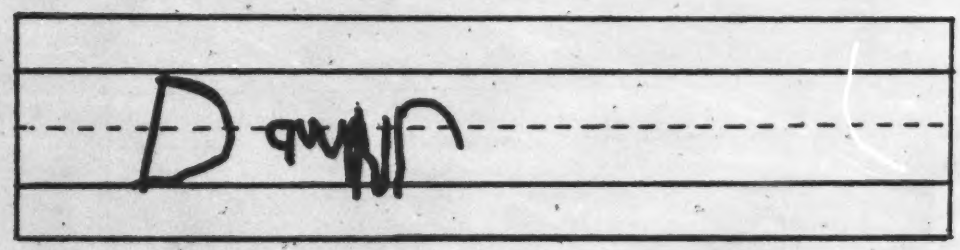
Pretest — Probe

1 

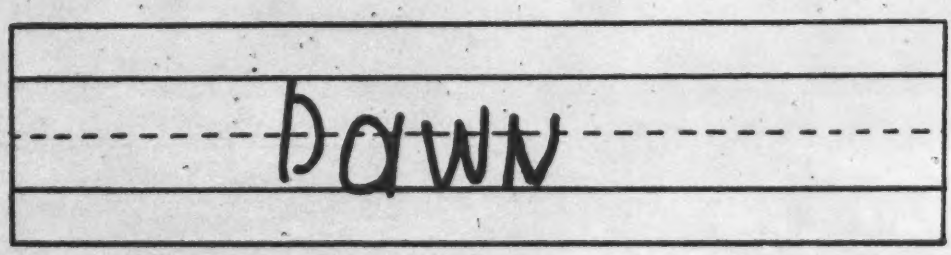
Pretest : Assessment

2 

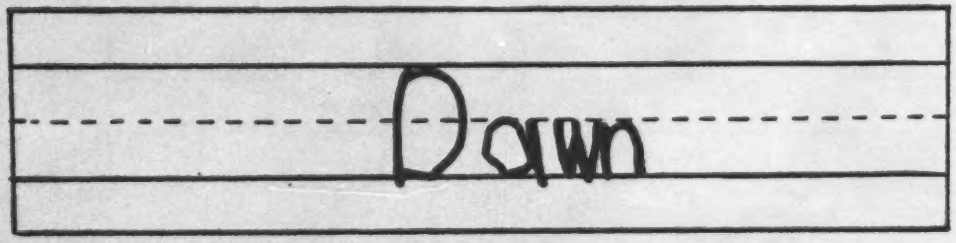
Probe 1: D Training

3 

Probe 2: a Training

4 

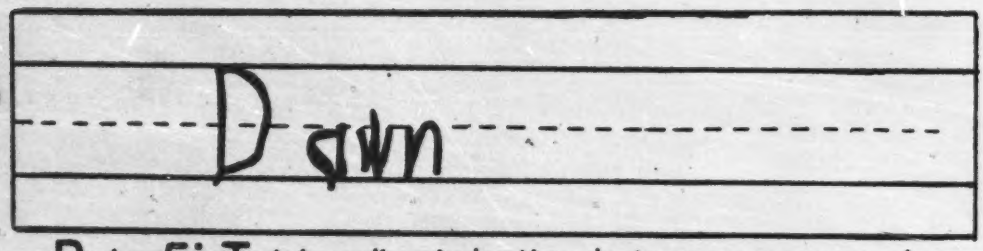
Probe 3: w Training

5 

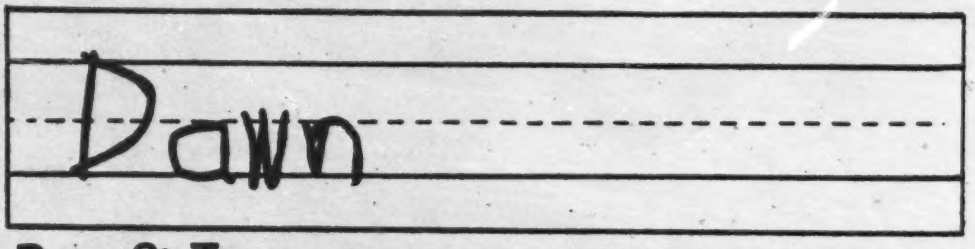
Probe 4: n Training

Figure 9

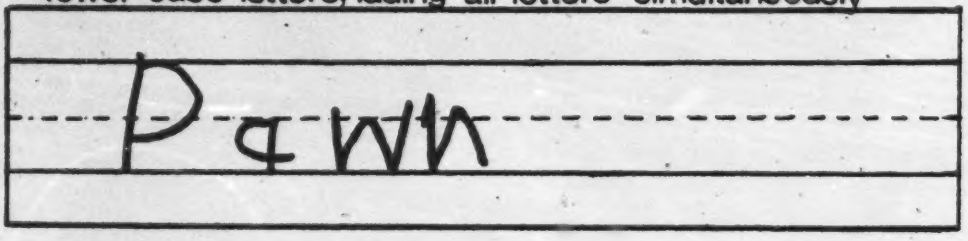
Probe

6 

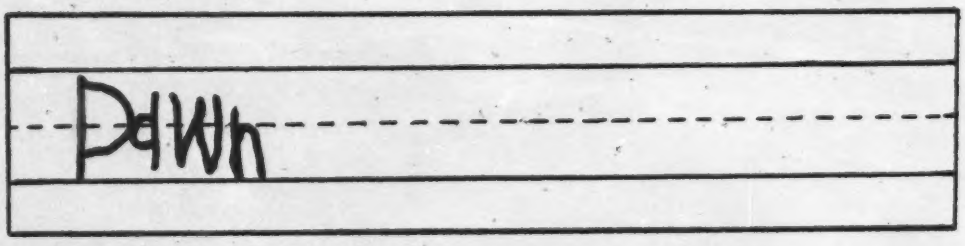
Probe 5: Training discrimination between upper and lower case Fading all letters simultaneously

7 

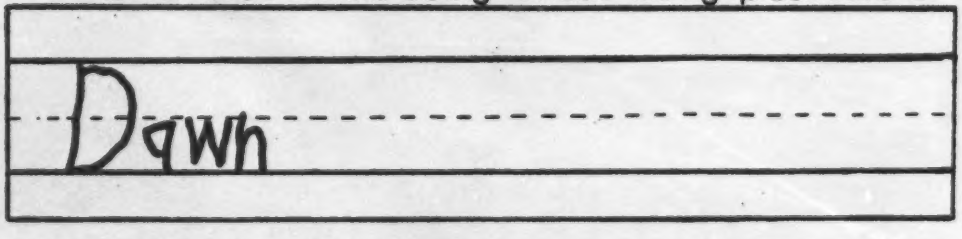
Probe 6: Training discrimination between upper and lower case letters, fading all letters simultaneously

8 

Probe 7: 4 Week break

9 

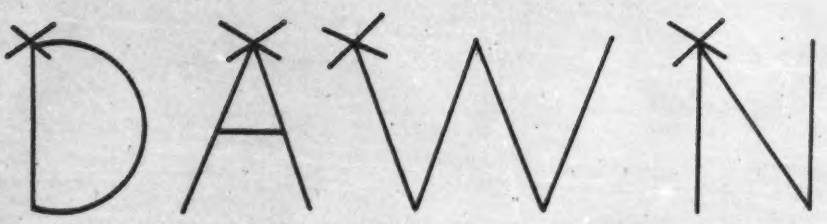
Probe 8: Training discrimination between upper and lower case letters using revised fading procedure for "a"

10 

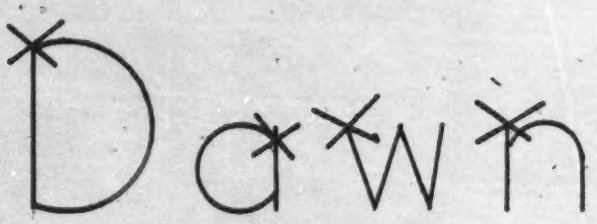
Probe 9: Training discriminatination between upper and lower case letters using revised fading procedure for letter "a"

Figure 10

Training Discrimination between Upper and Lower case Letters



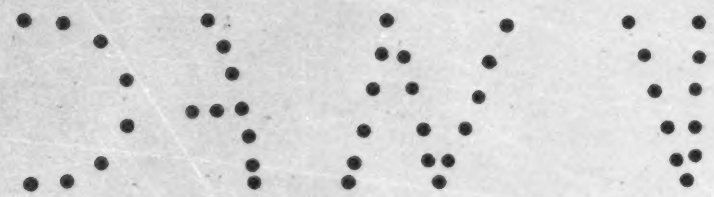
Step 1



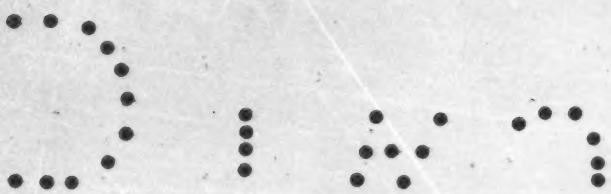
Step 2

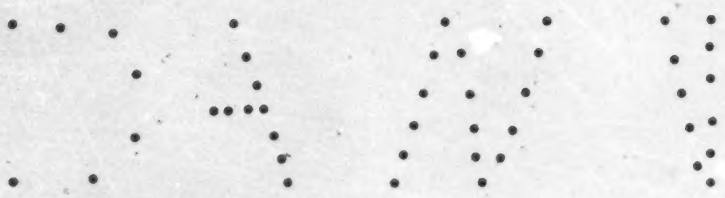
Figure 11

Training Discrimination between Upper and Lower case Letters



Step 5

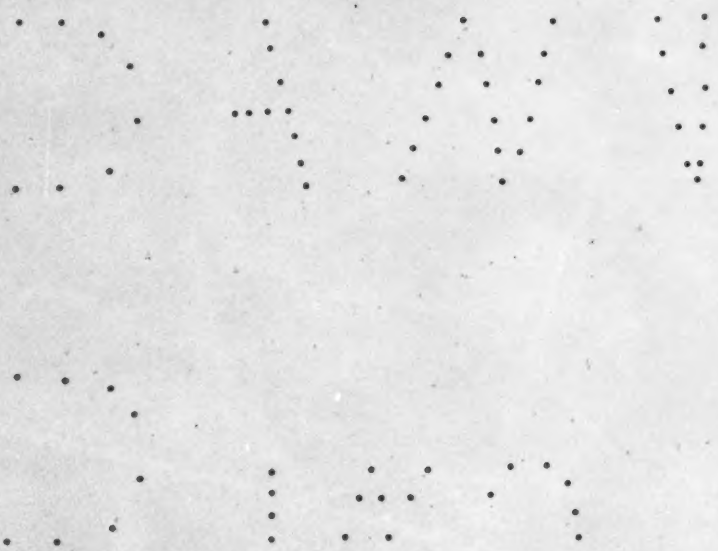




Step 6

Figure 12

Training Discrimination between Upper and Lower case Letters



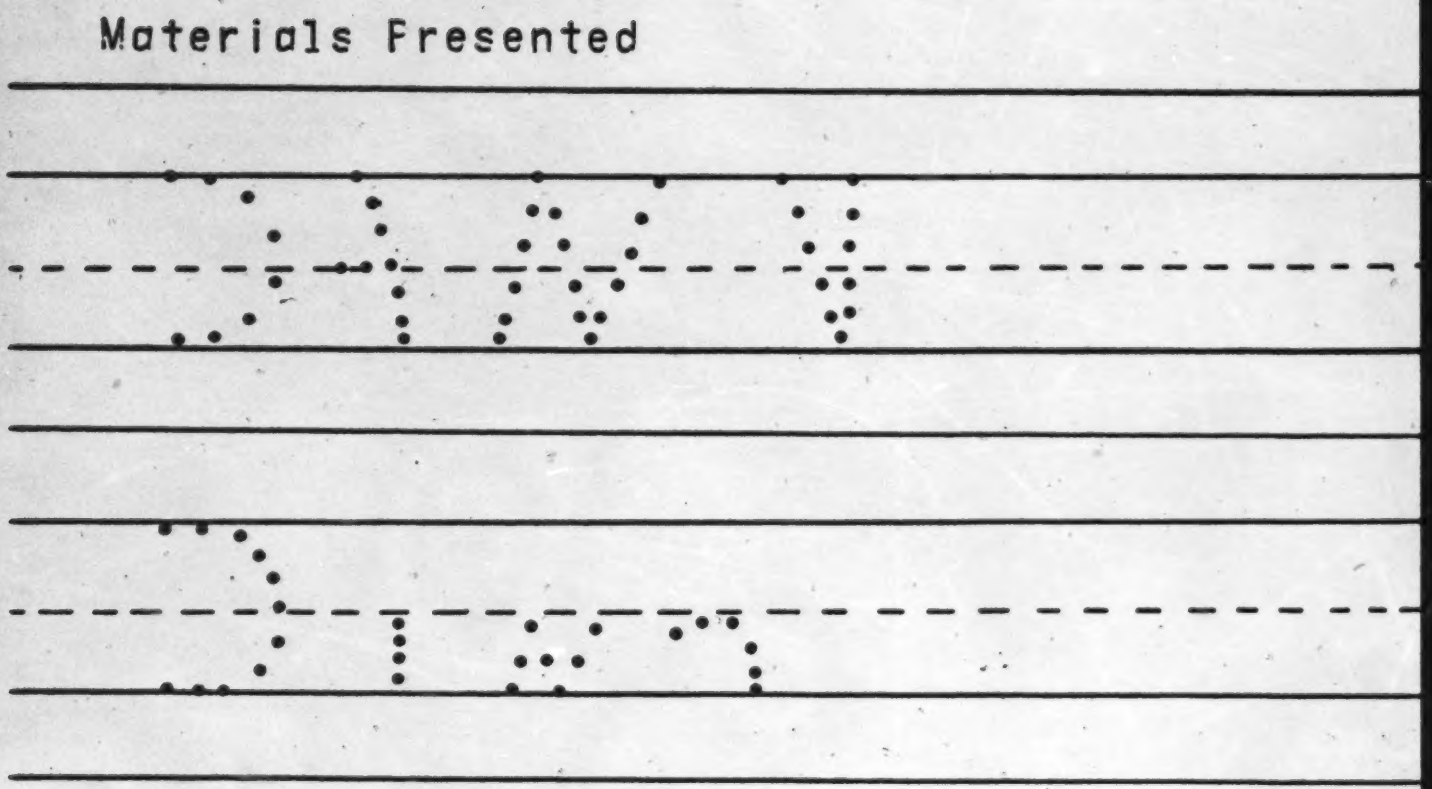
Step 7

None

Step 8

Figure 13

Training Discrimination
Between Upper and Lower Case Letters



Session 26: Trial 5

Figure 14

Training Discrimination Between Upper and Lower Case Letters

Child's Response

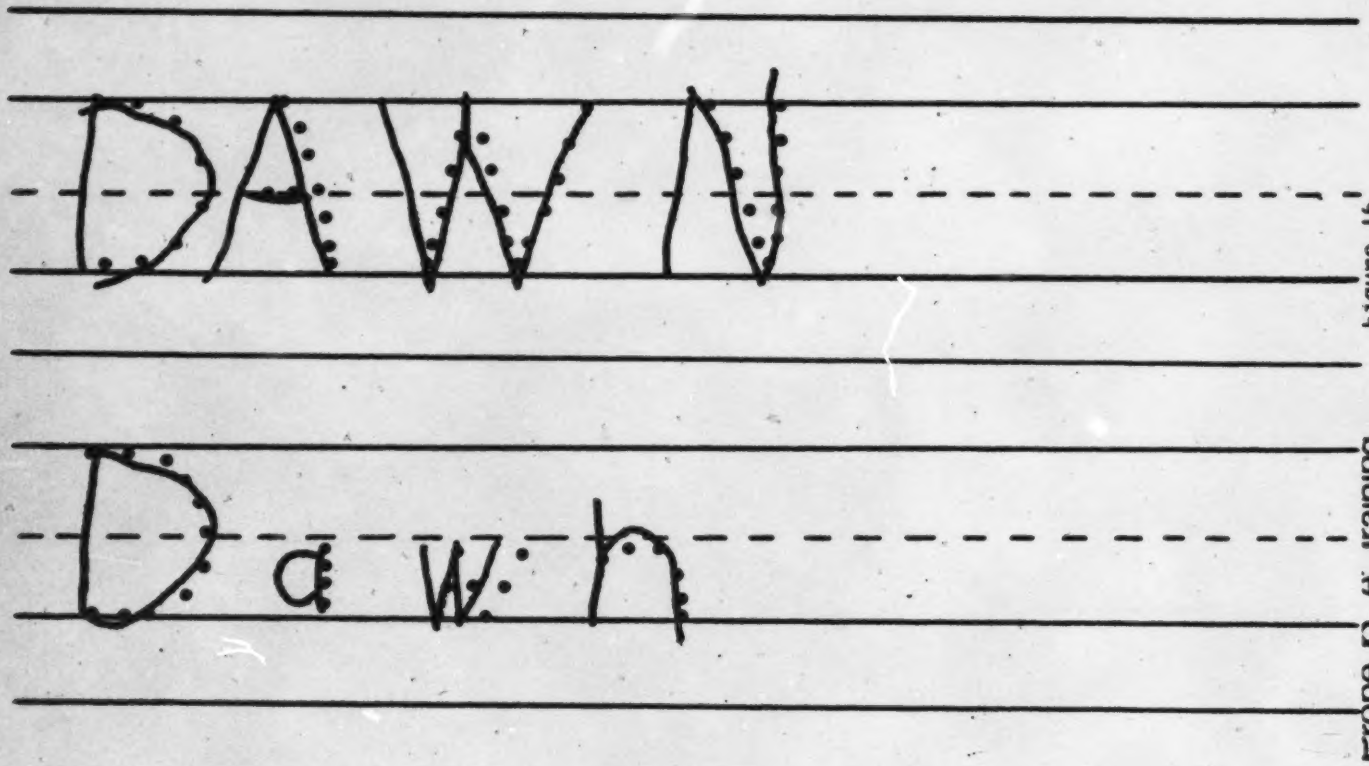


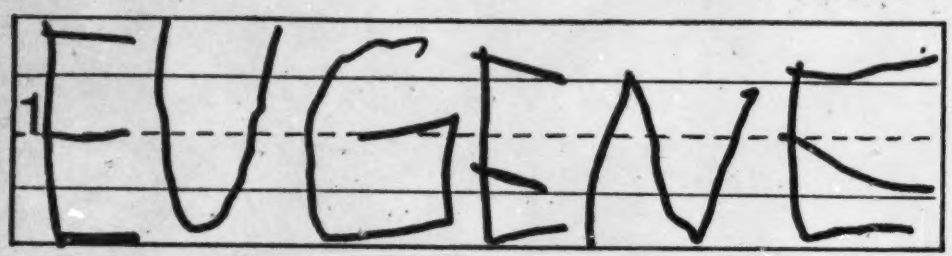
Figure 16

Probe of training

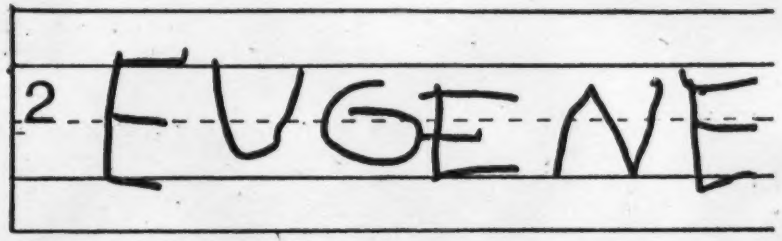
Session 26: Trial 5

Figure 15

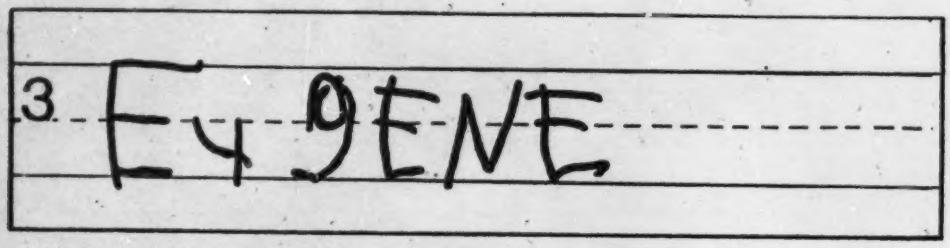
Pretest — Probe



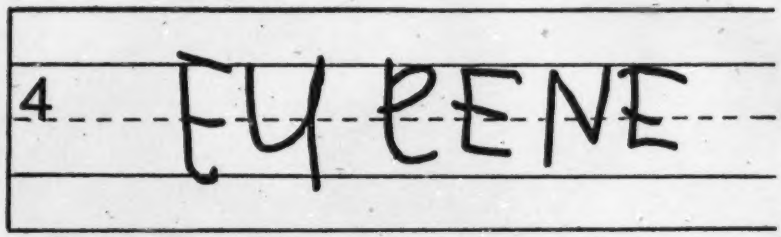
Pretest: Assessment



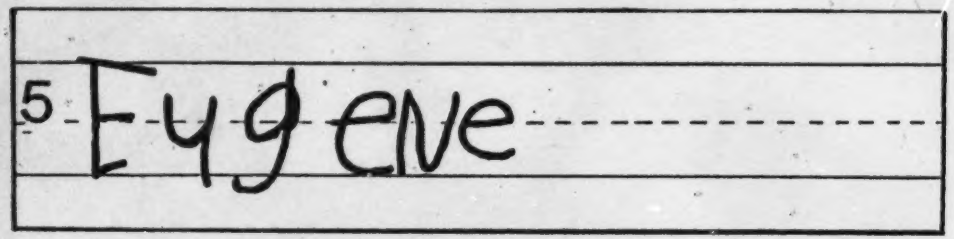
Probe: 1 'E' Training



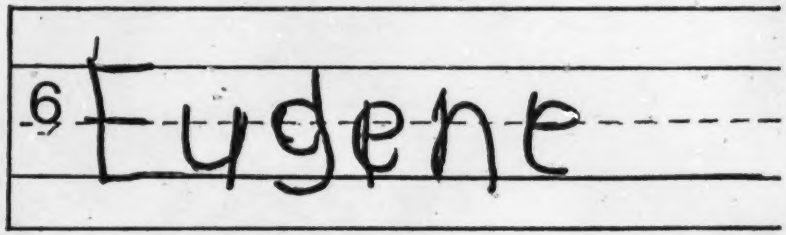
Probe 2: 'u' Training



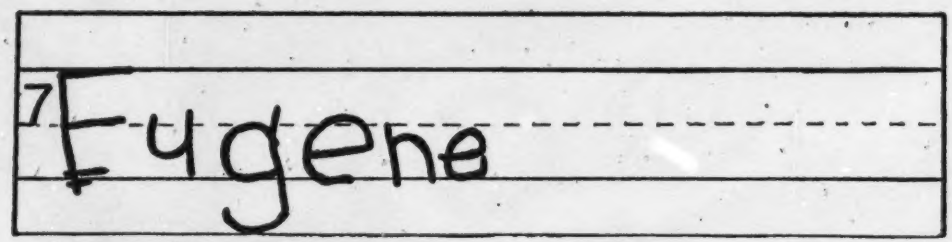
Probe 3: 'g' Training



Probe 4: 'e' Training



Probe 5 'n' Training

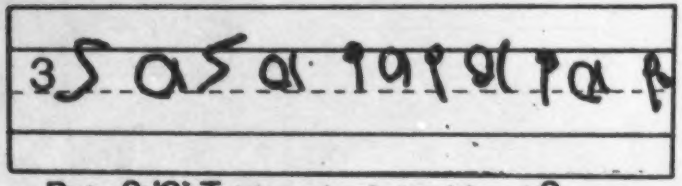


Probe 6: 'e' Training

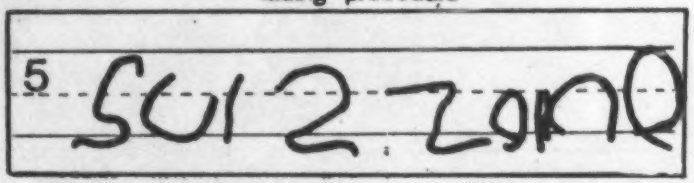
Figure 16

Pretest – Probe

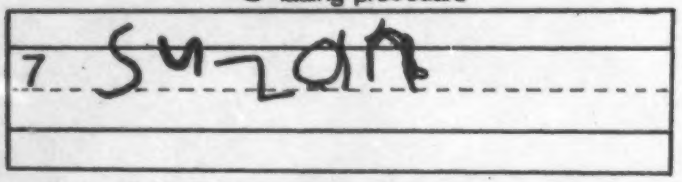
Pretest : Assessment



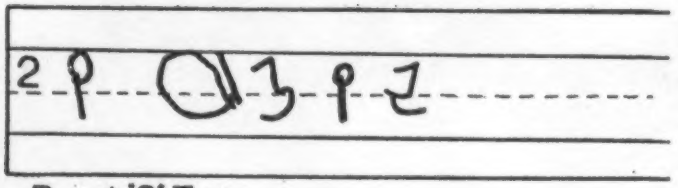
Probe 2: 'S' Training using first revision of S fading procedure



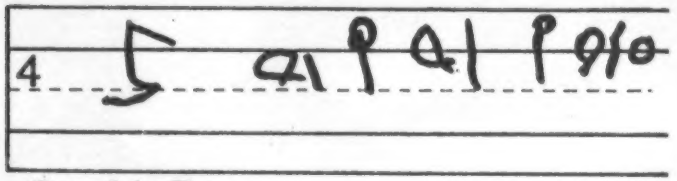
Probe 4: 'S' Training using second revision of S fading procedure



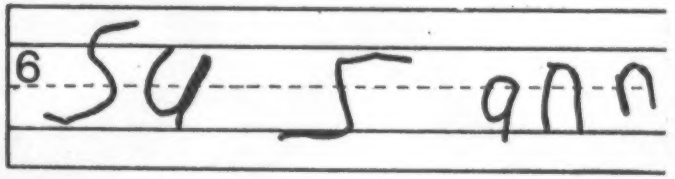
Probe 6: 'z' Training



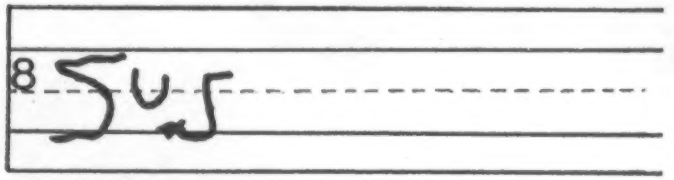
Probe 1: 'S' Training



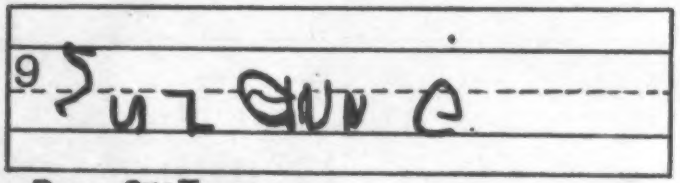
Probe 3: 'u' Training



Probe 5: 'u' Training



Probe 7: 4 week break



Probe 8: 'z' Training

Figure 17